

# VIDEO GAMES

by Len Buckwalter

Here is a complete, illustrated guide to the video game phenomenon that is sweeping the country.

## YOU'LL FIND OUT:

How video games developed • How they work • What game is best for you • How to install your model and how to make needed adjustments • What the new advances and improvements are

Includes

a comprehensive shopping guide to dozens of TV games now on sale.

*Now learn the designers' own secrets for winning visual games!*

AND A SPECIAL ADDED FEATURE: HOW TO CREATE YOUR OWN VIDEO GAMES.

\$300



# VIDEO GAMES

by Len Buckwalter

Here is a complete, illustrated guide to the video game phenomenon that is sweeping the country.

## YOU'LL FIND OUT:

How video games developed • How they work • What game is best for you • How to install your model and how to make needed adjustments • What the new advances and improvements are

Includes

a comprehensive shopping guide to dozens of TV games now on sale.

*Now learn the designers' own secrets for winning visual games!*

AND A SPECIAL ADDED FEATURE: HOW TO CREATE YOUR OWN VIDEO GAMES.





Everything you need to know about  
America's fastest-growing indoor sport!

# VIDEOGAMES

## A COMPLETE GUIDE

BY LEN BUCKWALTER

ILLUSTRATED • INSTALLATION • SERVICING

Includes Victory Secrets of Video Champs and an  
Exclusive Consumer's Guide to TV Games!



TEMPO BOOKS \$1.95 14138

CONTAINS A COMPREHENSIVE BUYER'S GUIDE

# VIDEOGAMES

A Complete Guide

**By Len Buckwalter**



All you need to know about the nation's hottest new home entertainment. Fully illustrated, with tips on buying the right set, installation, and maintenance. INCLUDES TIPS ON HOW TO BECOME A CHAMPION PLAYER!



U.S.A. 0006.95  
Canada 0007.95

# VIDEO GAMES

by Len Buckwalter



- Ever wonder how those television games work? Len Buckwalter tells you how, and more, with this handy guide to the video games phenomenon.
- Find out what games are available, and which of these are best for you and your TV set.
- Learn how to install and adjust the game once you've got it.
- Discover the secrets behind winning at video games. The designers know how to win, and Len Buckwalter tells their secrets.
- Expand the range of your video game! Create your own. This book will show you how to devise your own rules, handicaps, limits, and other variations.
- An illustrated shopping guide provides detailed descriptions of the many models currently offered on the retail market—complete with suggested list prices.



Publishers • GROSSET & DUNLAP • New York  
A FILMWAYS COMPANY

THE  
BOOK  
ALL ABOUT

# VIDEOGAMES

America's fastest-growing indoor sport!

Here's your guide to turning your living room into Madison Square Garden! With a videogame, you can play tennis, hockey, handball, and even auto racing on your own TV set! Everything you need to know is here, in one fully illustrated handbook:

- Tips on how to win from videogame champs
- Hints on how to invent your own video sports
- How to hook up your videogame
- What to do in case of trouble
- EXCLUSIVE! A complete shopping guide to dozens of videogame models

# VIDEOGAMES

## A COMPLETE GUIDE

Now there's always something exciting on TV!

TEMPO BOOKS  
GROSSET & DUNLAP, Inc., Publishers,  
New York, N.Y. 10010

# VIDEO GAMES

# VIDEO GAMES

BY

LEN BUCKWALTER

**GROSSET & DUNLAP**  
A Filmways Company  
Publishers • New York



**Copyright © 1977 by Len Buckwalter  
All rights reserved  
Published simultaneously in Canada  
Library of Congress catalog card number: 77-80225  
ISBN: 0-448-14345-3  
First Grosset & Dunlap printing  
Printed in the United States of America**

# Contents

Chapter 1	The New Playing Field	9
Chapter 2	What Is a Video Game?	16
	The Game Console	16
	Boundaries	17
	Paddle	22
	Ball Speed	25
	Ball Angle	27
	Scoring	28
	Bleep-Zonk-Plink	31
	The B & P	32
Chapter 3	Playing with Ball-and-Paddle	33
	Tennis	33
	Hockey	35
	Handball	37
	Squash	37
	Catch	38
Chapter 4	How to Shop for a Video Game	39
	Number of Players	39
	Solo Play	40
	Control Movement	43
	Control Feel	44
	Playing Speed	45
	English	45
	Serve	46
	Handicap Control	46
	Scoring	47
	Remote Controls	48
	Repeating Patterns	48
	Color	49

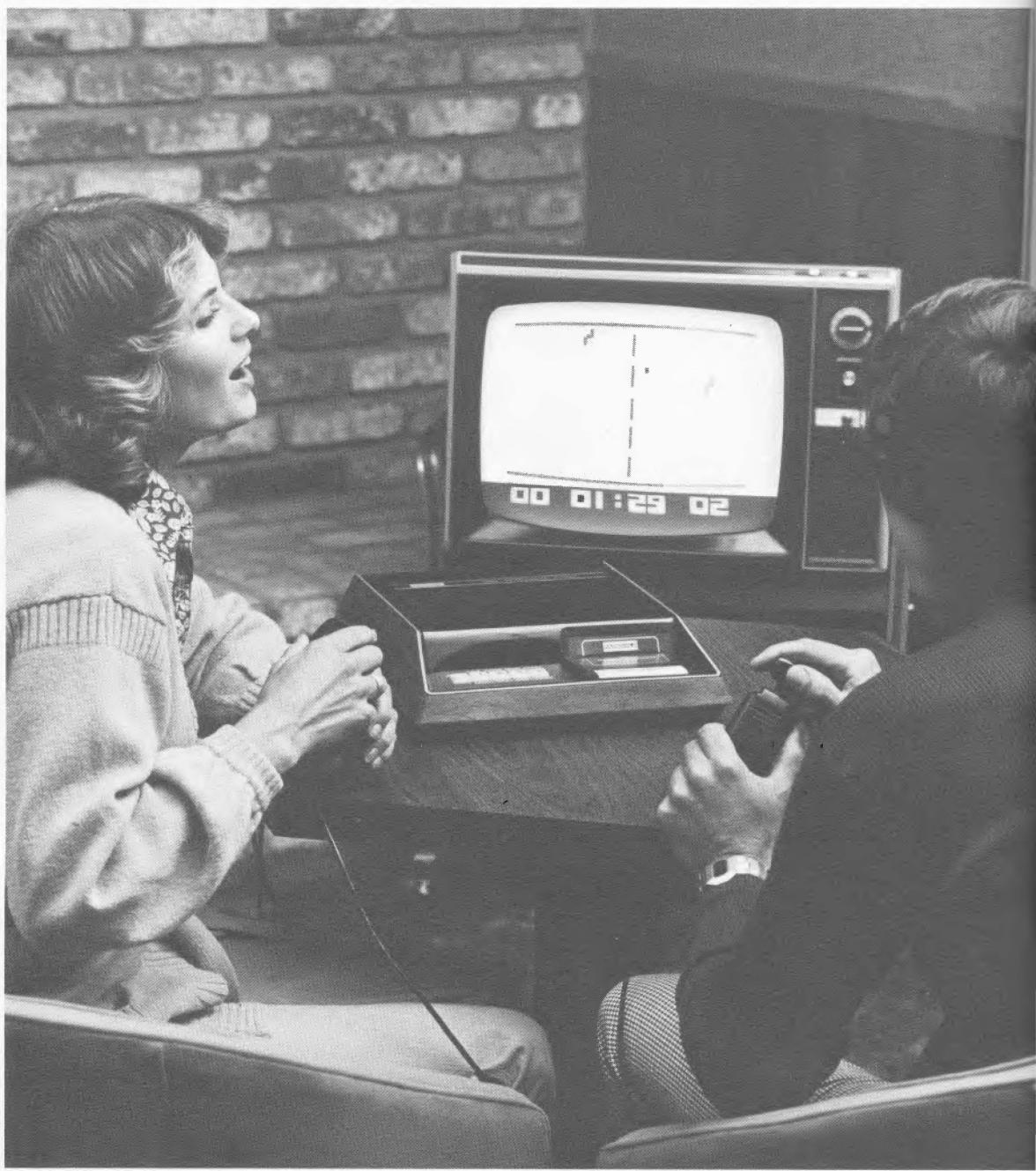
L 30779

	Time-Out	<b>50</b>
	Realism	<b>50</b>
	Other Shopping Tips	<b>51</b>
<b>Chapter 5</b>	<b>Hooking It to Your TV Set</b>	<b>52</b>
	Switch Box	<b>54</b>
	Cable and Master Antennas	<b>56</b>
	The Game Cable	<b>57</b>
	Hooking to Several TV Sets	<b>57</b>
	A Source of Electricity	<b>58</b>
	Choosing a Channel	<b>60</b>
	Adjusting the TV Set	<b>60</b>
	Room Lighting	<b>62</b>
<b>Chapter 6</b>	<b>What to Do in Case of Trouble</b>	<b>63</b>
	Warranties	<b>63</b>
	In the Store	<b>65</b>
	Read the Instructions?	<b>65</b>
	Heavenly Peace	<b>66</b>
	Hot Adaptors	<b>66</b>
	No Game Appears on Screen	<b>67</b>
	Blurry Game Picture	<b>68</b>
	Jittery Image	<b>69</b>
	Buzzing Sound in TV	<b>69</b>
	Slanting Lines	<b>70</b>
	Rolling Images	<b>71</b>
	Top or Bottom Cut Off	<b>72</b>
	Sides Cut Off	<b>75</b>
	Bars or Pictures Behind Image	<b>76</b>
<b>Chapter 7</b>	<b>Secrets of the Video Champs</b>	<b>77</b>
	Ingenious Engineers	<b>77</b>
	Electronic Quirks	<b>78</b>
	Control Sensitivity	<b>79</b>
	Player Variations	<b>79</b>
	Psych Out	<b>80</b>
	Nervous Service	<b>80</b>
	Dirty Trick	<b>80</b>
	Repeating Gambit	<b>80</b>
<b>Chapter 8</b>	<b>Shoot-'em-ups and Road-Racers</b>	<b>81</b>
	Target Games	<b>83</b>
	Battleground	<b>83</b>
	Road Racing	<b>85</b>

<b>Chapter 9</b>	<b>Games With Brains</b>	<b>87</b>
	Channel F	<b>87</b>
	Video Vegas	<b>93</b>
	Studio II	<b>95</b>
	Bowling	<b>96</b>
	The Home Computer	<b>96</b>

<b>Chapter 10</b>	<b>Make Up Your Own Games</b>	<b>99</b>
	Solo Mio	<b>99</b>
	Switch Hitter	<b>100</b>
	Left-right, Right-left	<b>101</b>
	Cross Purposes	<b>101</b>
	Dominant Hand	<b>102</b>
	Time Factor	<b>102</b>
	Penalty Box Hockey	<b>102</b>
	Dodge Ball	<b>103</b>
	Constructing Your Own Playing Field	<b>103</b>

<b>Chapter 11</b>	<b>Consumer's Guide to Video Games</b>	<b>112</b>
-------------------	--	------------



# 1

## The New Playing Field

America's love affair with toys that contain teeny computers heated up in 1976. During that year some 4 million customers bought videogames—the latest gadget in a growing line of space-age products. It was a replay of what happened in 1973, when the digital watch bowed in at \$2,000, then tumbled below \$20. A year later, the electronics industry topped itself with another digital delight—the pocket calculator—and a worldwide market raced toward 40 million units. During 1975 the public's appetite for technological goodies exploded into a national craze called CB radio.

But 1976 will go down as the year of the videogame. After languishing as a curiosity in the home, or limited to a coin-operated amusement in cafes, airports and arcades, videogames suddenly shot skyward. From 1975 to 1976, manufacturers saw their sales increase ten times. Almost overnight, millions of TV viewers began twiddling the knobs on over a dozen videogames that were rushed to market. Although plagued by parts shortages and slow deliveries, manufacturers watched their sales curves zoom and predicted that 12 million games a year would be sold by 1980. What unleashed the buying frenzy?

Dropping prices and a welter of new models launched the new industry, but that's only half the reason. The other is that videogames captured the public's fancy. Some observers say the appeal is that anyone can become an instant athlete while sitting safely at home. There's no risk of a sprained ankle, tennis elbow or the agonizing slipped disk. That argument—well—baloney. Ask any tennis player to compare the reality of the game to the video version and you'll get anything from a

sneer to the whack of a backhand. How can a flicker on a boob tube compare with an invigorating set of tennis? The video image is a mere shadow of the real thing. No, the lure of the game lies elsewhere.

The videogame's delight is that it's a computerized magic lantern. Dancing images radiate the kind of lure that attracted our grandparents to the nickelodeon and the stereopticon viewer. You can see it in the radio-TV department of almost any large store on a Saturday afternoon. Huddled around TV screens are people enchanted by the careening images, psychedelic colors, and digits that tot up the score with the authority of a cash register. Soon the spectators examine the price tag and make the connection: a videogame can illuminate their TV screen at home with the excitement of a penny arcade.

Much of the game's intrigue is in the eye, but not all. Videogames feed the ear with a cacophony of zonks, plinks and beeps. As they pluck your auditory nerve, these sounds fill a practical role, signalling when you've gained a point, bounded off a wall or scored a goal. They give weight and momentum to the fleeting wisps of light that represent ball and paddle.

Besides appealing to the senses, videogames satisfy a fierce competitive spirit lurking in players of any age or sex. I recall showing a game to friends—a married couple—visiting my home. The hour was late and they were ready to leave but politely agreed to play my newest toy. As the first streaks of light arched across the screen, and the players saw the tallying score, the innocent game became a battleground. The players fought for nearly an hour and wouldn't leave for home until each had won an equal number of victories.

Through uncanny coincidence, a cartoon appeared in *The New York Times* two days after that episode. It pictured a man and woman seated before a videogame. As the action unfolded over a series of six drawings, each player scored a point, until the man scored two points in a row. In the last panel, the woman bolts upright—while yanking the game's plug out of the wall.

Whatever the reason, videogames bring people together. No other human activity besides sleep, say psy-

chologists, takes up more time than watching television. With a videogame attached to the TV, not all those hours are spent in passive looking.

The newest games open endless possibilities for home entertainment and education. I recall an electronics convention in the late 1960s where I was invited by an exhibitor to play tic-tac-toe against his million-dollar computer. The machine competed with a spooky intelligence that stroked in crafty X's against my desperate O's. Today you can buy a videogame that does the same thing, and more, for under \$150. The new machine is a sassy contender—and calls you "turkey" if you lose.

That's a far cry from what happened when the first video game appeared in 1972. Introduced by Magnavox and dubbed "Odyssey," it was a simple apparatus by today's standards. The circuits weren't smart enough to electronically paint the playing field, so the player had to tape a transparent overlay on the TV screen to represent the court. The nation got its first glimpse of the new game in 1973 on a Sunday night special starring Frank Sinatra. Although the game's below-\$100 price was in reach of many buyers, it remained a curiosity. Four years would pass before the videogame could become a household item.

During that time, a new generation of video jocks fed a king's ransom in quarters to coin-operated videogames in bars and truck stops everywhere. The high cost and complexity of these machines didn't matter—they were money-makers. The breakthrough to the consumer market happened in 1974 when Atari (a coin-op manufacturer) landed a model in the Sears Roebuck catalog. Called Pong, it was designed to work with any TV, new or old. By 1975, scores of new models and plummeting prices triggered the boom in videogames.

The technical star of this success story is the "chip"—an affectionate name given by engineers to a sliver of silicon about the size of a baby's fingernail. Silicon is one of the most plentiful substances on earth (it's a major ingredient of beach sand), but in the hands of electronics outfits like Texas Instruments or National Semiconductor, the element is refined to amazing purity, etched in delicate layers and doped with exotic

chemicals that enrich it with electrical charges. Out of this brew emerge thousands of microscopic switches joined in patterns of exquisite complexity. Because the switches have no moving parts—they snap on and off electronically—there's nothing to wear out. What is more, each switch can operate thousands of times each second. This combination—a tremendous number of switching elements connected in intricate pathways—gives the designer "logic" circuits to create a videogame. By flipping on and off at different rates, the switches generate bursts of electricity within the TV set

**Fig. 1-2.** Coin-operated videogame.

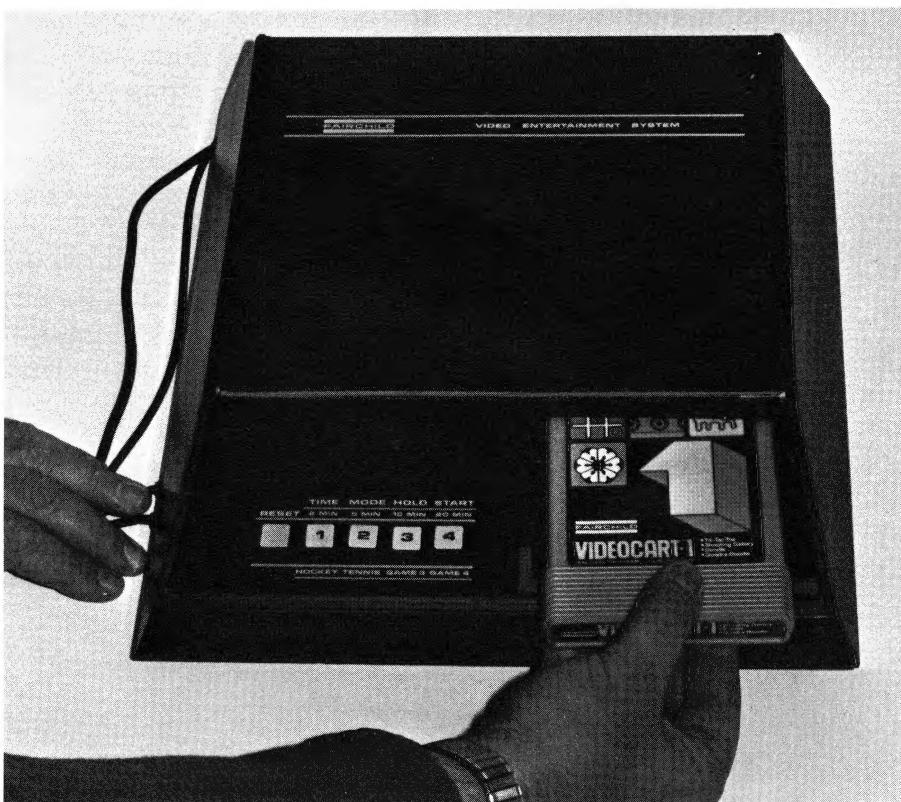




**Fig. 1-3.** "Crash 'N Score", another action-packed coin-op videogame.

that drive lighted blips across the screen in a curving path to represent a ball, or paint the slash of light for a paddle. As you play the game and move its controls, you are changing the switching rates and thus the direction and speed of elements on the screen.

Another remarkable feature of the chip is the number of functions it provides at a low price. At the beginning of 1977, one company offered a new chip to game-makers containing the logic for tennis, hockey and handball.



**Fig. 1-4.** Programmable game receives plug-in cartridge.

That's not all. The electronic mite could also handle scoring, ball size, ball angle and automatic or manual serve—and generate the beeping sounds. Cost of the chip was a piddling \$4, thanks to high-volume production and little hand labor. By eliminating dozens of circuits used in earlier models, the new "single-chip" game could slash retail prices by about 40 percent.

The chip described so far is in the so-called "ball-and-paddle," or first-generation, videogame. As 1975 drew to a close, the engineers added another facet to their electronic jewel. Advancing chip technology enabled them to contrive a second-generation game of nearly limitless playing ability. The brainy new breed would have something called a microprocessor, popularly known as a computer-on-a-chip.

The breakthrough is that the new games are "programmable." In earlier games, the chip received its program, or instructions, during the manufacturing process. The games could not be changed once they left the factory. A microprocessor, on the other hand, is vastly more flexible. With a plug-in cartridge, the player can insert a new set of instructions into the microprocessor at any time. By purchasing additional cartridges that contain the logic for other games, the possibilities are endless.

The microprocessor is more elaborate than a single chip (itself a complex device). To the consumer it means that sophisticated second-generation games will cost two or three times that of the ball-and-paddle variety. But even here there is cause for excitement. Early in 1977, a major manufacturer offered the microprocessor to the game makers at a wholesale price of about \$25. It's an impressive figure, considering that a home video-game can now have more calculating power than an IBM computer of the early 1950's! The IBM model, incidentally, took up a whole room and probably cost more than \$1,000—to rent, per month.

Is the videogame the hula hoop of the seventies—to evaporate when the next electronic gewgaw comes along? Not likely. The videogame, most people in the industry believe, is the tip of an iceberg, the vanguard of the coming age of the "home computer." When you're tired of playing a videogame, you'll plug in a cartridge and ask the device to flash your bank balance, recall a rare recipe or take the headache out of figuring income tax. The educational and amusement possibilities are staggering.

Today's videogames are marvels of technology, but that's no guarantee you'll get a good one at the right price. As mass-produced products, some samples will suffer manufacturing defects, uneven quality-control or shoddy assembly. You'll see promotional blurbs that confuse or baffle. So before you buy a videogame, learn how to judge a prospective model—and what to do if its circuits fall sick after you get it home. That's what the rest of this book is about.

# 2 What Is a Video Game?

## The Game Console

The heart of most videogames is a small console placed a comfortable viewing distance from the TV set. Players gather about the console and sit within reach of the controls. Some games offer a feature known as remote control. With controls on long extension cords, they allow players to sit almost anywhere in the room.

You can begin a videogame as quickly as your TV set can warm up. There's no need to hook up wires because the game remains connected to the TV after it's installed. You can store the game under or behind the TV and unravel the cable when you want to play. Because the game contains no tubes, it's ready to play the instant you switch it on.

You will know the game is ready because most models emit a beeping sound when switched on. It's heard even if the TV set is turned off. Besides announcing that the game is active, the sound reminds you to switch off the power when you're finished playing. The amount of electricity consumed by a videogame is small—usually less than that consumed by the bulb of a small flashlight lamp—while the TV set draws the same amount of electricity as during normal reception.

The first time you turn on a videogame, experiment with each control. One switch chooses the type of game—tennis, hockey, or some other contest. There is a lever to select the degree of skill needed to play the game, for example, beginner, intermediate or advanced. A reset button on the console returns the score to zero when the game is over, or it can interrupt a game in progress and let you begin again. Most of the action

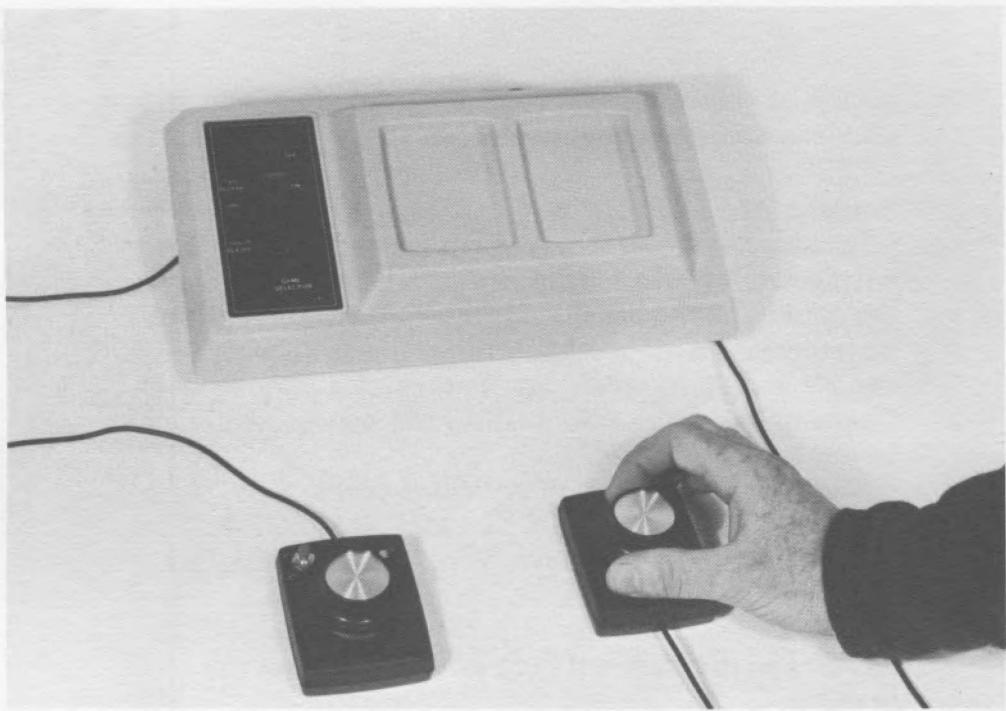
occurs as you grasp knobs or levers that change your playing position on the screen.

### Boundaries

In the horse-and-buggy days of videogames, preparing to play was hardly convenient. For each game, the manufacturer provided a sheet of transparent plastic imprinted with boundary lines. It was fastened over the TV screen to create the pattern of a playing field. Changing the game meant fitting the screen with a different overlay.

That was back in 1972. Videogames today electronically generate each pictorial element—for example, ball, paddles, courts, rinks, nets—for any sport furnished with the game. To change the field you merely flick a switch, and the correct outlines emerge. Color appears on the screen if both game and TV set can play in color.





**Fig. 2-2.** Remote controls may be removed from console.

**Fig. 2-3.** Game selector switch.





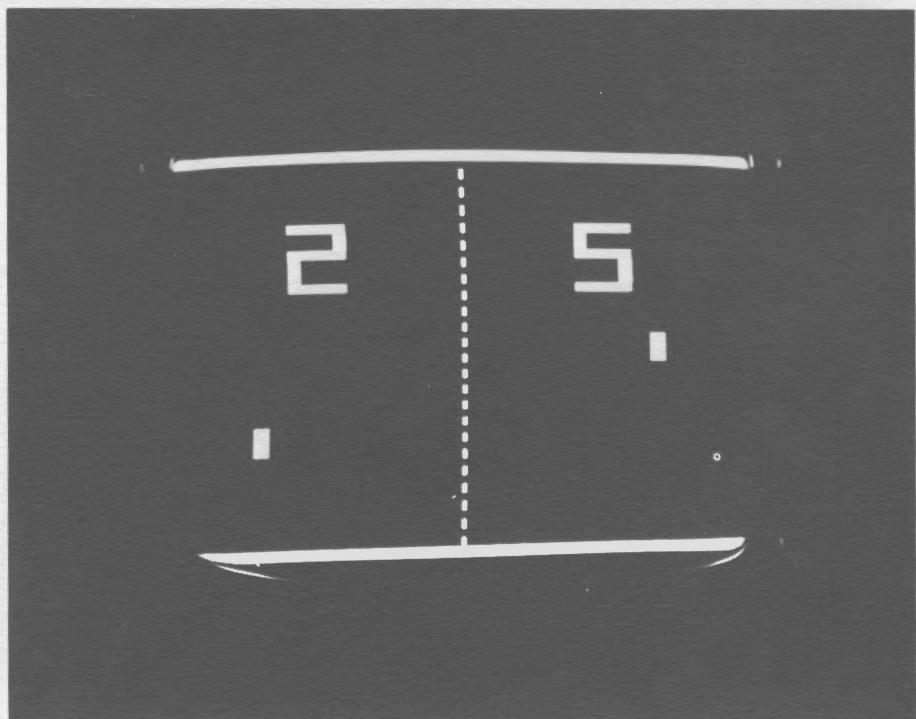
**Fig. 2-4.** Skill switch controls ball speed.

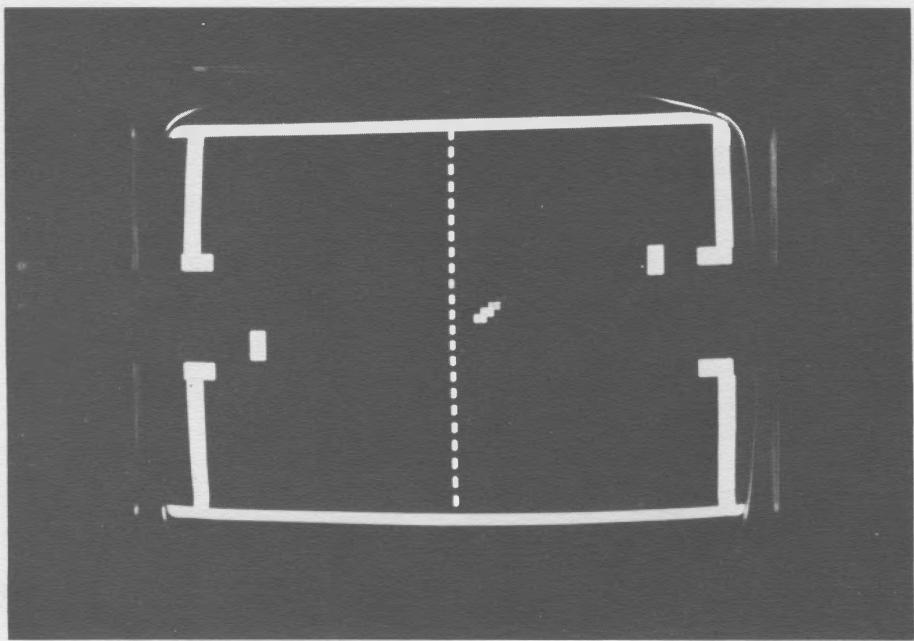
**Fig. 2-5.** On this console, knobs control on-screen players.



A popular playing field is the tennis court, shown in figure 2-6 . A line down the center of the screen represents the net, while horizontal lines at the top and bottom create the court boundaries. Or choose a hockey rink. Notice how goals are formed at either side, with an opening to admit the puck. When the game is switched to handball, a vertical line appears at one side to represent the wall. Racing and rifle games display roadway lanes, targets or other symbols.

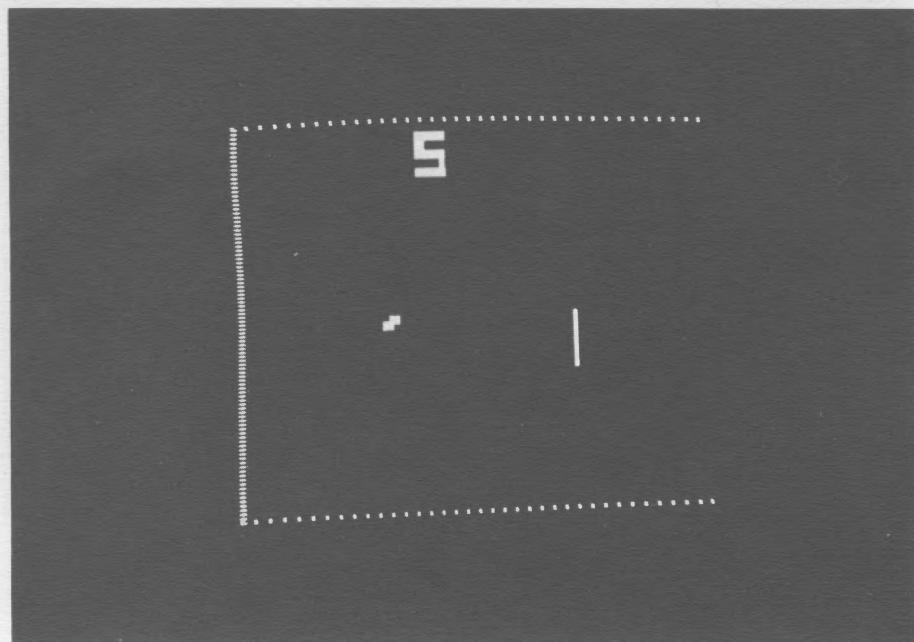
**Fig. 2-6.** Net and boundaries for tennis.





**Fig. 2-7.** Hockey rink. Moving puck is near center.

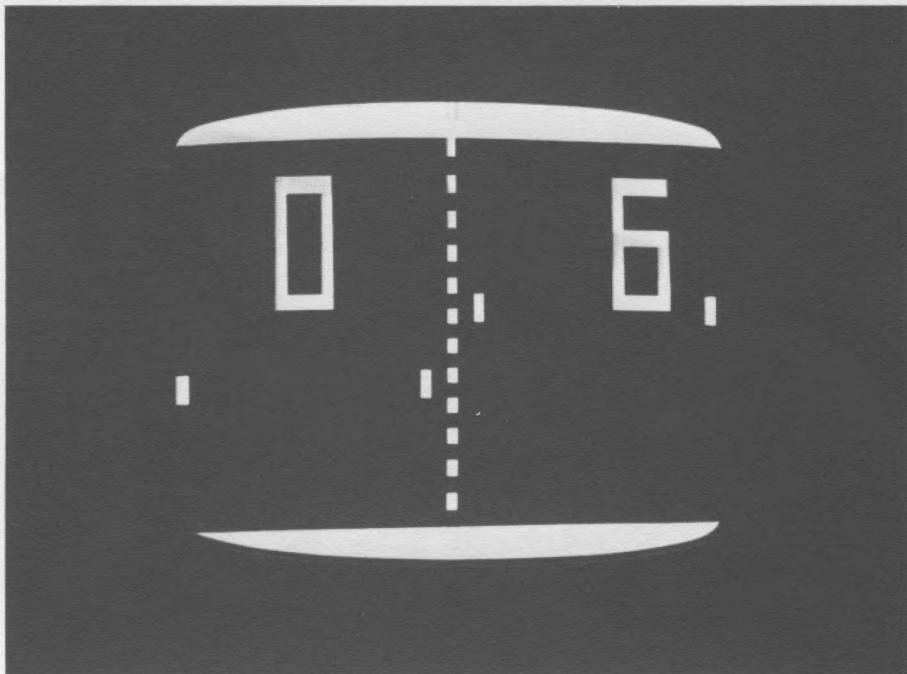
**Fig. 2-8.** Handball court. Wall is at left, player at right, ball in center.

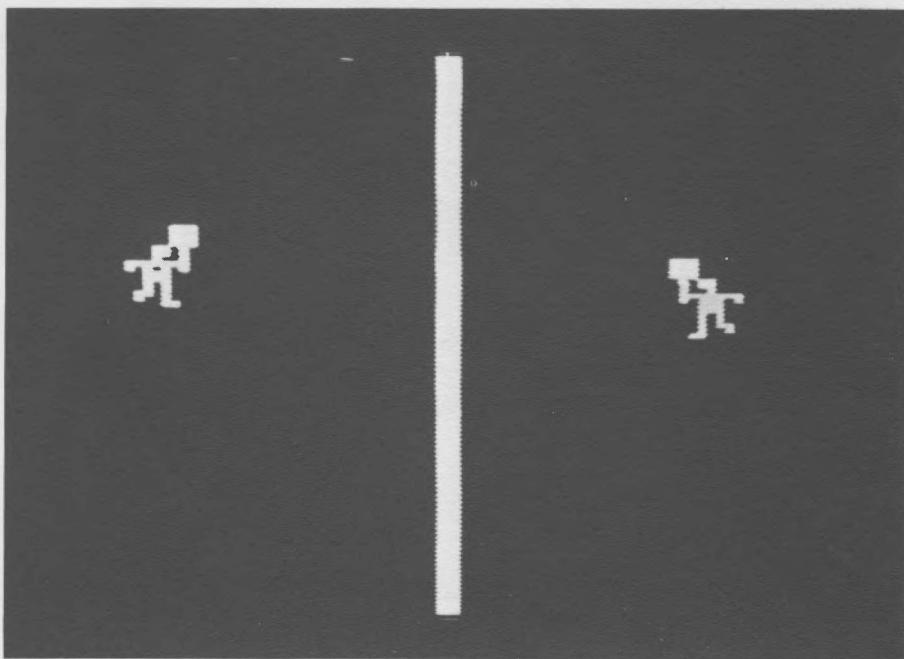


### Paddle

In most games a slash of light on the screen represents you, the player. Although some models paint more realistic images—a miniature figure with arms and legs, for example—inexpensive games manage only a short vertical line. It's viewed as a racquet, paddle or hockey stick. Also, in the simplest games your paddle moves up and down only, with no left and right motion. More advanced models have additional controls for side-to-side, or horizontal, motion. Most flexible is the "joystick," so called because it can move over a full circle, like the joystick, or main control, of an airplane.

**Fig. 2-9.** Four paddles appear as short strokes of light.

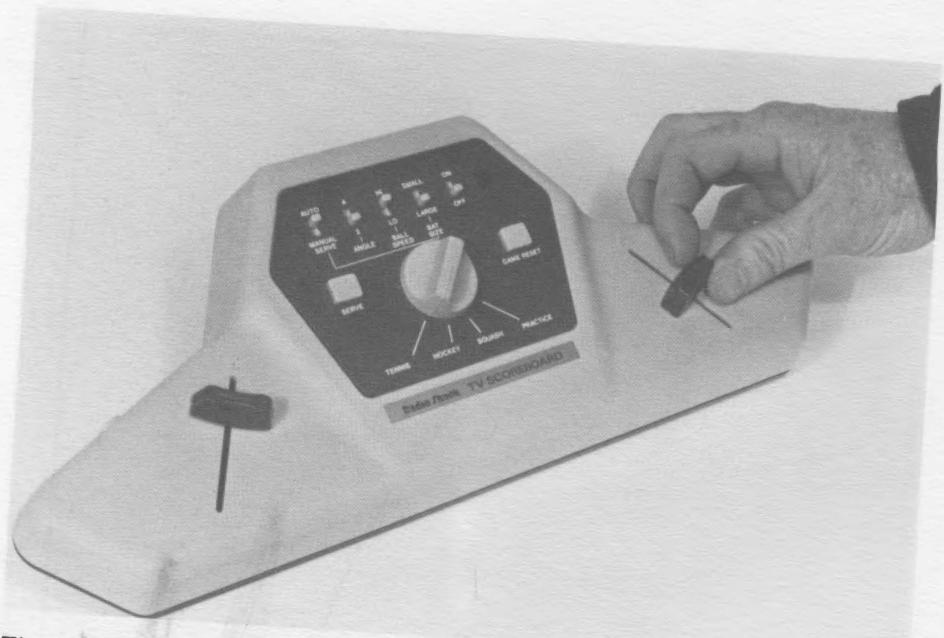




**Fig. 2-10.** Realistic image of tennis players.

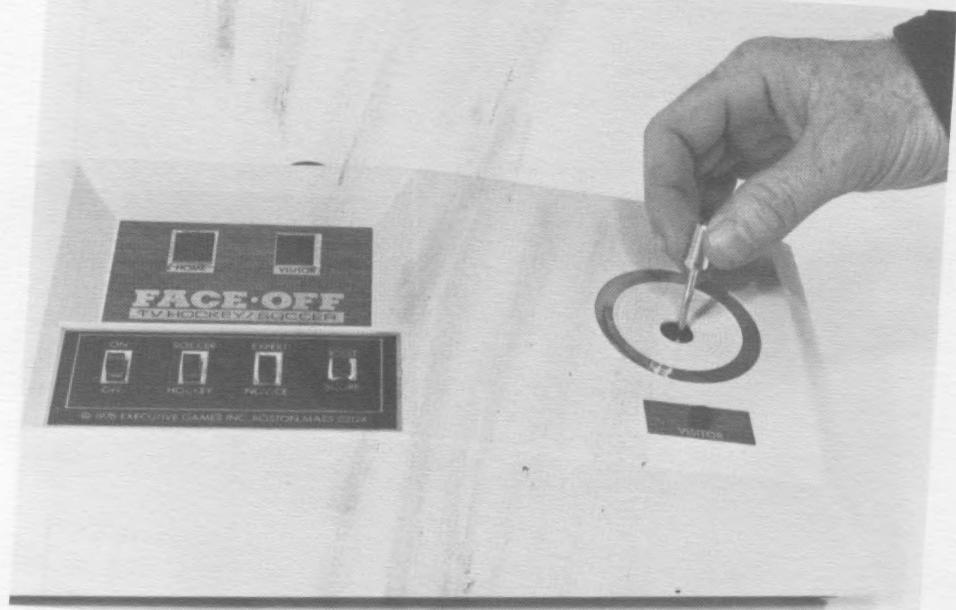
**Fig. 2-11.** Paddle movement is controlled by knob.

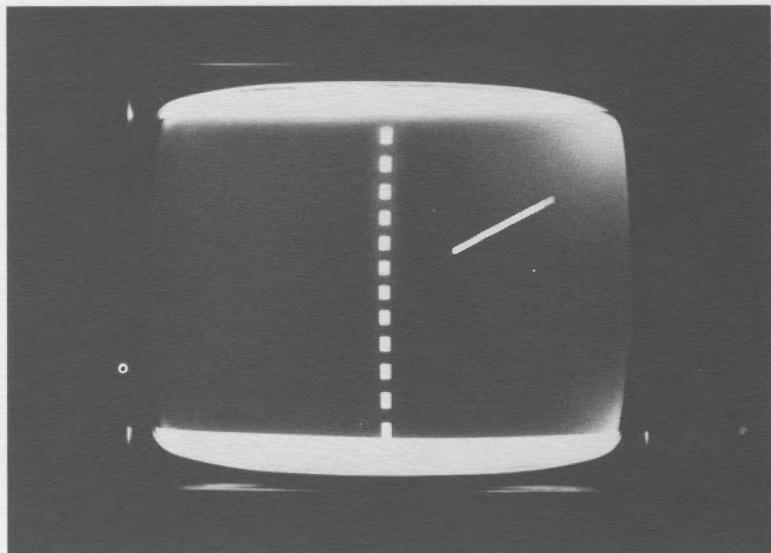




**Fig. 2-12.** Levers control paddle movement.

**Fig. 2-13.** Joystick control.





**Fig. 2-14.** Ball is seen here as slanting line of light.

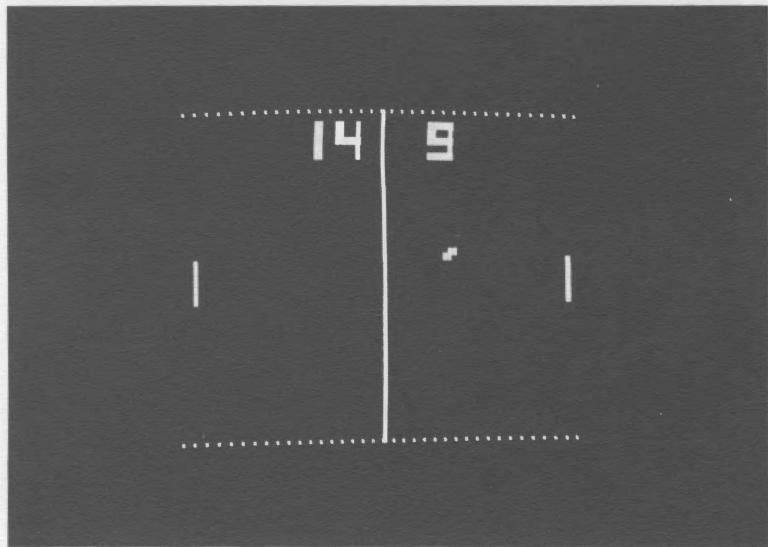
### **Ball Speed**

A hurtling blip of light represents the ball or hockey puck in simple games. The players carefully eye the spot and try to intercept it by maneuvering the paddle. If a paddle makes contact, the ball rebounds across the screen. A point is scored in tennis if the ball zings past your opponent, and in hockey if the puck slides into the other side's goal.

After playing a while, it becomes too easy to hit the ball because of your increasing skill. That's why most games offer a feature for toughening the challenge. One technique is increasing the ball speed, done in some models in steps with a knob numbered 1 through 10. In others, a three-speed switch alters the skill level.

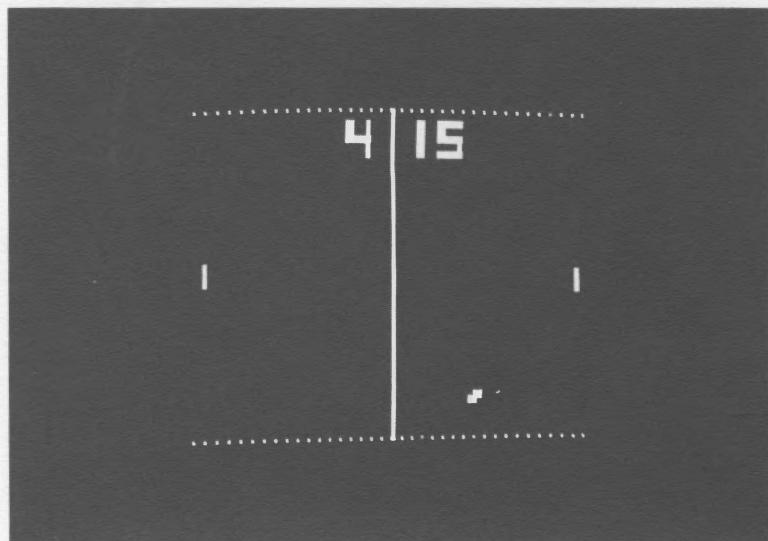
That's not the only way to make a game more demanding. In some models, as ball speed is increased, the size of the paddle is decreased. The combination of faster ball and smaller paddle challenges most players, no matter how skillful.

Although you can select ball speed in many games, some models do it automatically. After three or four volleys the ball darts across the playing field at an increas-



**Fig. 2-15A.** Paddles set to Beginner (large) size.

**Fig. 2-15B.** Paddles set to Advanced (small) size.



ingly faster pace. It's a realistic feature because your skill will probably increase after several warm-up volleys. When one player misses, however, the game automatically slows the ball to the starting speed, then increases the rate again as play progresses.

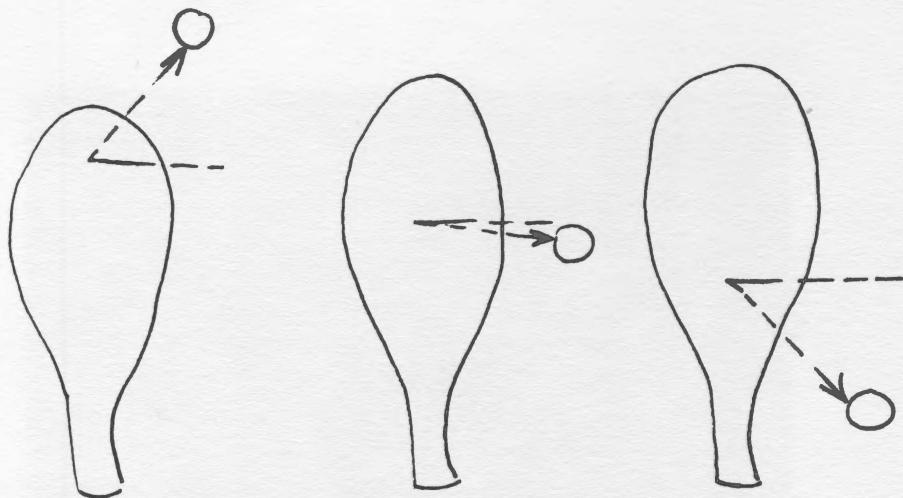
### Ball Angle

A game with no "English" would be a bore to play. You would swing a paddle and watch the ball return toward your opponent without changing its angle of flight. In real-life games, of course, a ball rebounds according to the way it is struck. Such variation in ball angle appears in videogames too. Note in figure 2-16 how the paddle tilts so a player can steer the ball to a specific area on the opponent's side.

Simple games, however, cannot simulate the method of actually imparting English to a ball—where the player slants or "cuts" the racquet. It's often done by dividing the paddle into several sections. As shown in figure 2-17, when the ball strikes the center area of the paddle, it rebounds straight back. If the ball hits the top part of the paddle, it bounces upward, if it hits the lower part it rebounds in a downward direction. Once you're aware of these angles, you can exploit them. Instead of simply moving your paddle to intercept the ball, you'll carefully position the paddle for an angle that surprises your opponent. On other games a switch controls the ball angle.

**Fig. 2-16. Tilting control knob.**





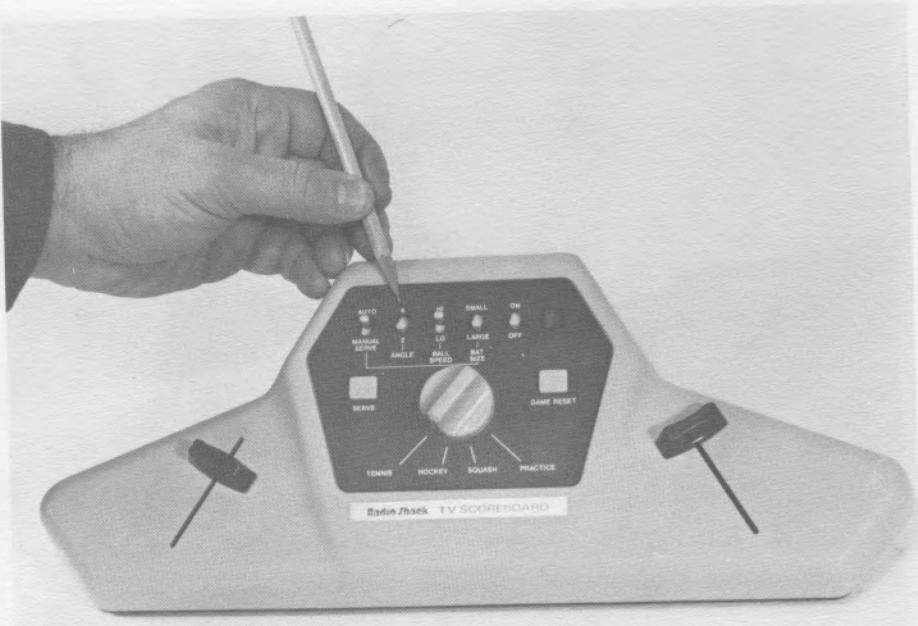
**Fig. 2-17.** Ball angle depends on where ball strikes paddle.

Advanced games change the ball angle automatically as you play. To recreate an actual playing situation, one game bounces the ball at wide angles during the first three volleys. If no player misses, the game narrows the angle for the next four through seven volleys. If there are still no misses, the angle narrows further. The last ping-pong game you played may have followed a similar pattern. The players return the ball at a wide angle during the opening volleys and, as the game grows hectic, the ball is smashed at high speed.

One model has a unique English control. An extra knob on the console lets you change the ball's direction after it leaves the paddle. By manipulating the English control, you can make the ball dip and swoop as it flies back to your opponent.

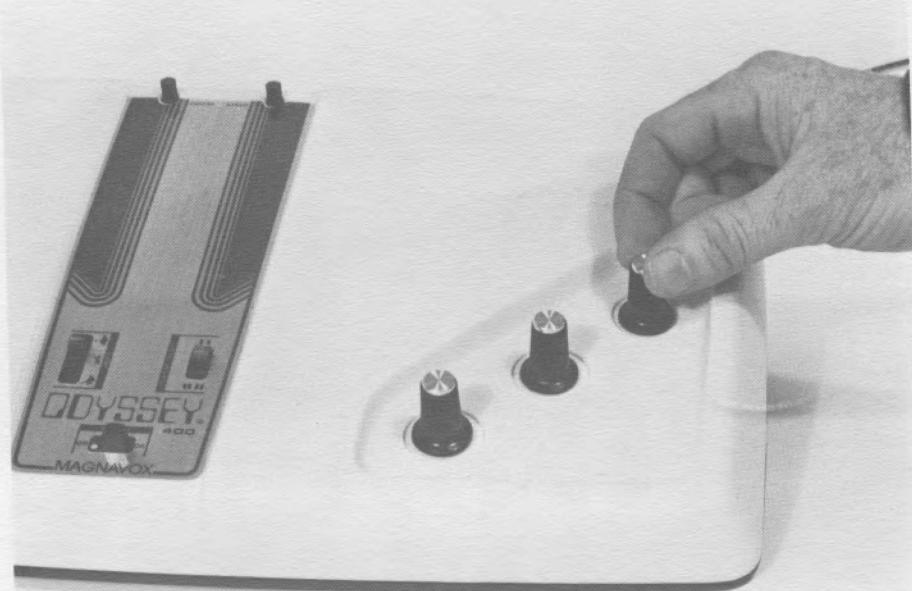
### Scoring

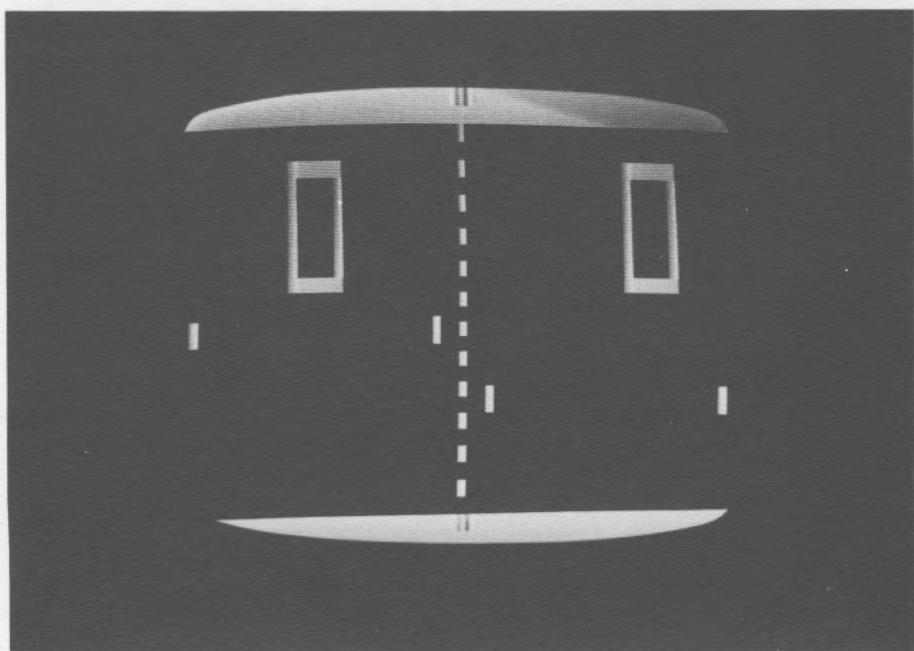
Keeping track of who is winning a videogame was once a chore. On early sets, each player manually moved a control to tally a point. As game circuits grew wiser, manual scoring was improved by an automatic display of slash marks, but these were difficult to see and confusing to comprehend. Most games today take the headache out of tallying by digital on-screen scoring. It means that scoring automatically appears as you



**Fig. 2-18.** Switch changes ball angle.

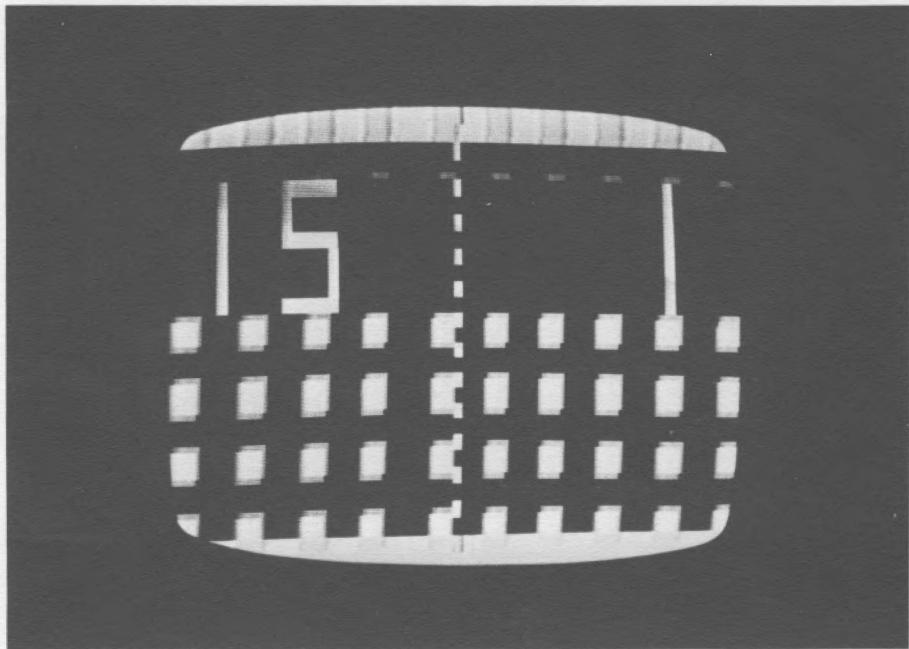
**Fig. 2-19.** English control.





**Fig. 2-20.** Two zeros announce start of a game.

**Fig. 2-21.** Game ends when score reaches highest number, which is 15 in this game.



play the game. The electronic scorekeeper knows when you or your opponent wins a point and flashes it on the screen. You'll see a running tally of how the game is proceeding.

Before you begin a videogame, you will reset the scoring system. Two 0's flash on the screen—one for you, one for your opponent—and the ball is served. When either player misses the ball, the score changes from 0-0 to 0-1 or 1-0, depending on who won the point. You will know when the game is over because the digits will freeze on the screen and won't go higher.

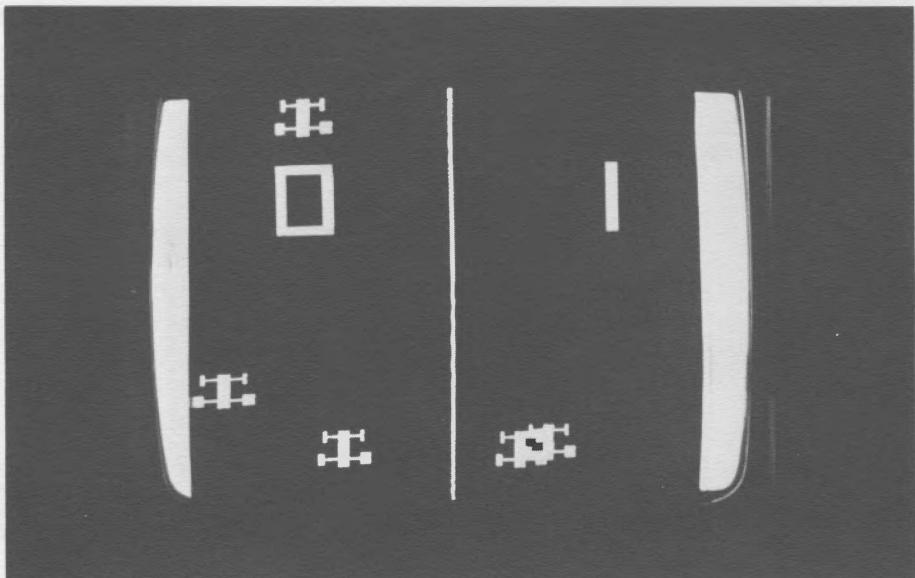
In some models the ball disappears when the game ends, but in others it bounces aimlessly until you press the reset button and return the scoreboard to 0-0.

### Bleep-Zonk-Plink

A videogame without sound is like a horse race without a crowd. The event loses excitement. Manufacturers know this and shrewdly accent the play with an assortment of audio beeps. You will hear one each time

Fig. 2-22. Reset button.





**Fig. 2-23.** Each major event, like colliding cars at lower right, produces an electronic beep in the game's loudspeaker.

the ball strikes a paddle, rebounds against a boundary, scores a point or goes through some other gyration.

These sounds are called realistic, but they're probably the most artificial sounds heard by human ears. Unlike natural sounds, which are usually produced by mechanical vibration, the game's voice is generated by the oscillations of an electronic circuit. Because they smack of computers and space satellites, many players find them a pleasant punctuation to the action on the screen.

### The B&P

Those are the basic features of what industry jargon calls the "b&p," or ball-and-paddle, game. With their to-and-fro motion on the TV screen, and demand for hand-to-eye coordination, they comprise the first generation of videogames. And no matter how complex any game becomes, chances run high that it will include some form of play that resembles tennis, hockey or handball.

What are those complex games? They include the roadracers, target shooters and "programmables." Because these games operate far beyond the ball-and-paddle repertoire, we will look at them later on.

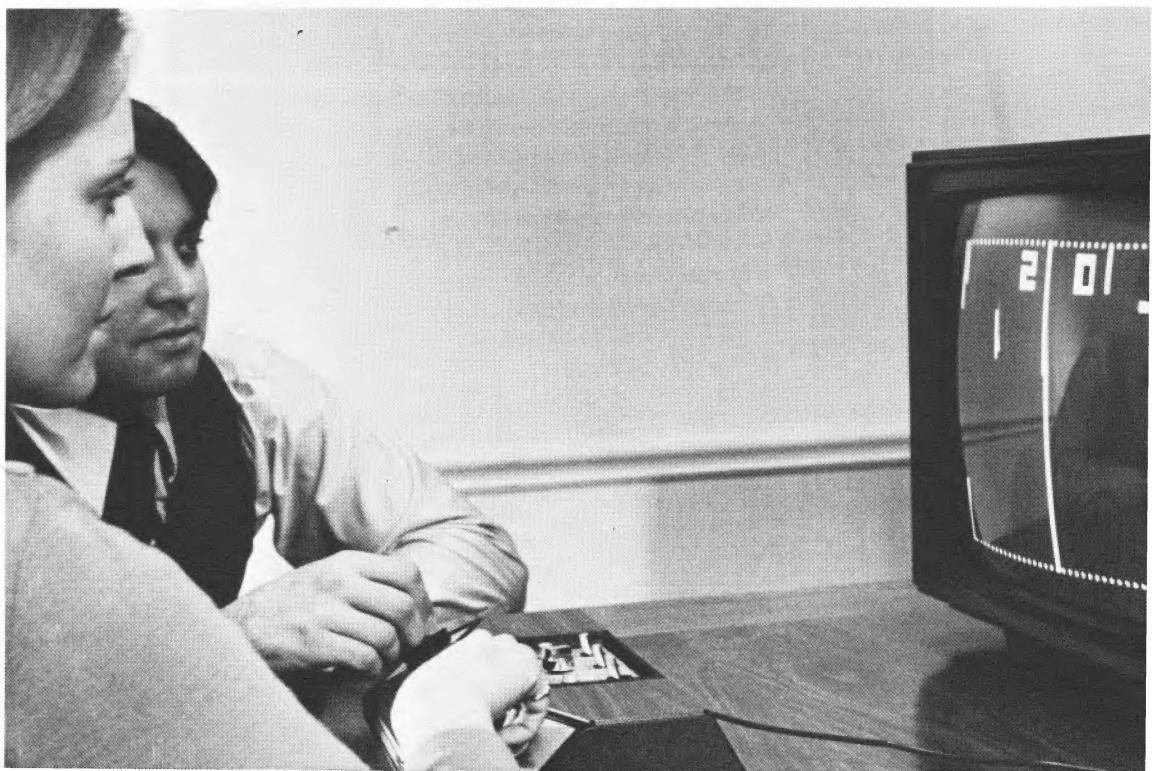
# 3

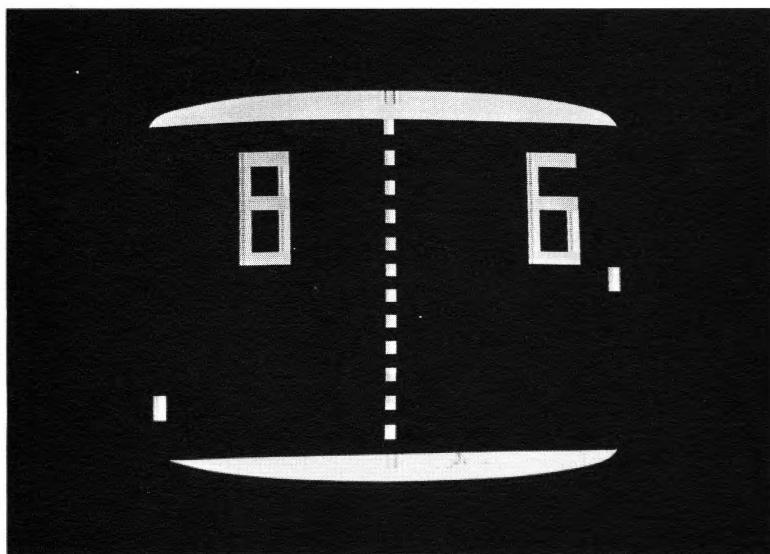
## Playing with Ball-and-Paddle

Your first videogame may well be the ball-and-paddle variety. It's not only the simplest type, but could be a bargain you won't be able to resist. The reason is the dedicated chip—an electronic mite offered only to game manufacturers. By adding a cabinet, controls and other accessories, game producers exploit that cost-cutting part by making an array of finished products. Here are typical ball-and-paddle games you'll encounter in local stores.

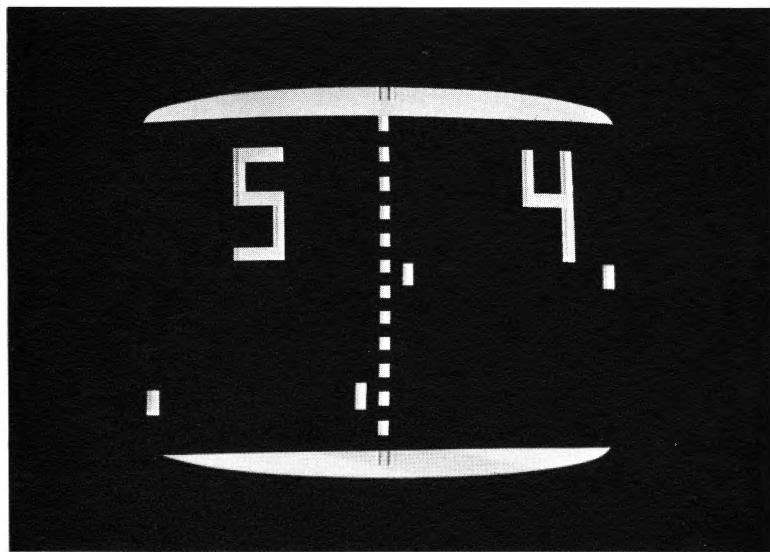
### Tennis

One of the most common videogames, tennis can usually be played by two or four people. The object, as in real tennis, is to send the ball across the net past your opponent. If he fails to return it, a point automatically registers on your side of the screen. The first player scoring 15 or 20 points wins the game.





**Fig. 3-2.** Tennis court, singl



**Fig. 3-3.** Doubles tennis.

Besides a net in the center there are top and bottom boundaries. A ball that strikes either boundary rebounds back onto the court and resumes active play. (In real tennis, it would be an out ball.)

How the ball is served varies according to the game. In many cases, it originates at the paddle of the player who scored the last point. When the game is over, the ball continues to bounce around the court but passes

through the players' racquets without scoring further hits.

Because many video tennis games permit players to move only up and down, with no horizontal action, skill variations and handicapping are important—changes in ball speed, angle and paddle size, for example.

Games with doubles tennis can often be controlled by two players, as shown in figure 3-3. With a single knob, you can move two paddles in tandem. More advanced games provide a pair of player controls on each side, allowing four people to play a version of doubles tennis that is closer to the real game. In doubles tennis, the electronic circuit is programmed so one side cannot hit the ball twice. When a back-court player hits, he may see the ball pass through his front-court partner. Other names for tennis-like games include table tennis, Pong, Super Pong and Smash.

### Hockey

Along with tennis, hockey is a popular ball-and-paddle contest. When a selector is switched to hockey, boundary lines form a rink along the top and bottom of the screen. Goal areas appear as openings in left and right vertical lines. During the game, each contender defends his goal or tries to drive the puck into the opponent's goal. The game is set up for two or four players. To win, a player must generally score from 8 to 20 goals, depending on the particular model.

As you can see in figure 3-4, the simplest version com-

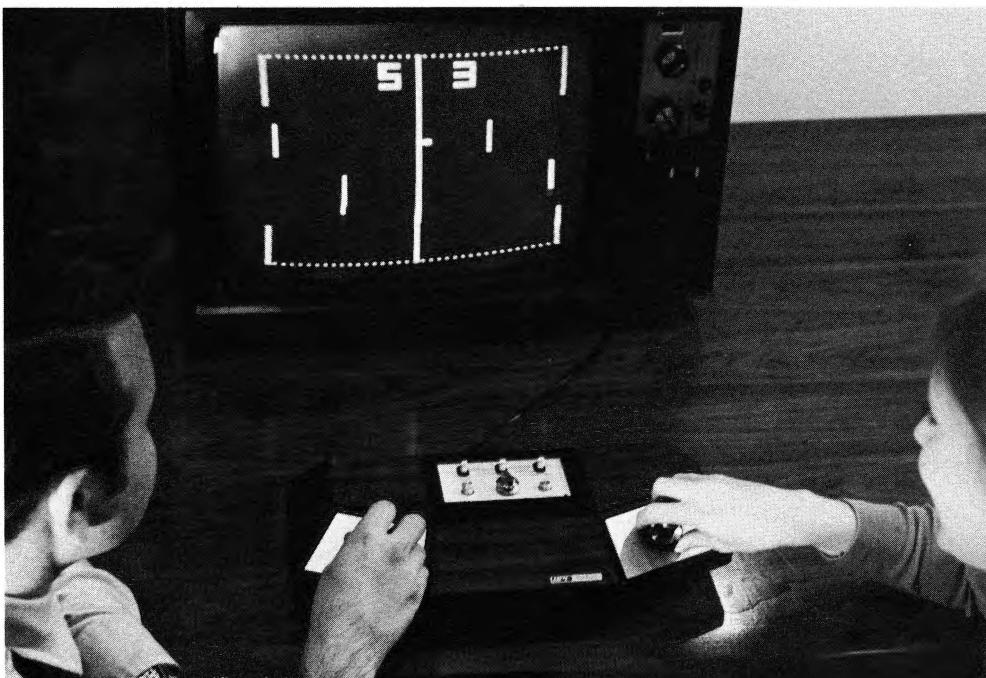


Fig. 3-4. Hockey.

bines two playing positions—goalie and forward—into a single paddle. This simple arrangement, however, is increasingly replaced by two-paddle hockey. When you turn a knob, both paddles on your side move in unison over the rink. One paddle either protects your goal, or hits the puck toward the other side. The second paddle, located near your opponent's goal, stands ready to slap home the puck.

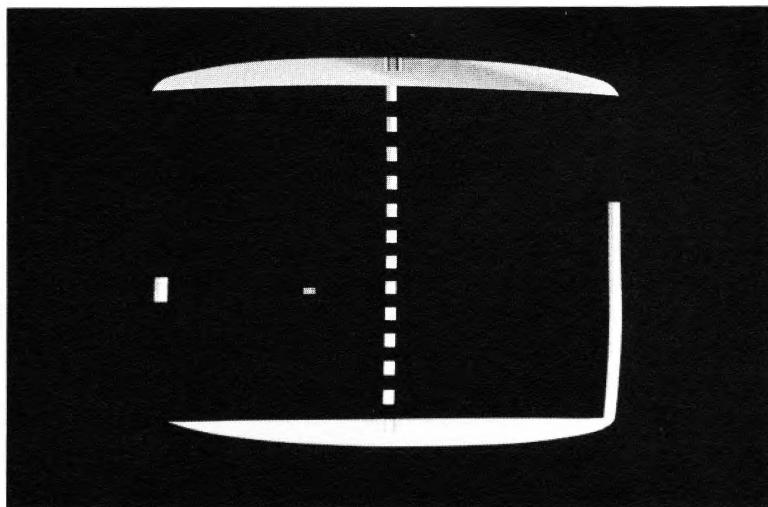
Video hockey may prove slightly confusing to the beginner. It takes a bit of practice to master the game, especially the technique of controlling two paddles with one lever. Beginners often concentrate on one paddle and play a defensive, goal-blocking game. With this limitation, only an occasional rebound of the ball reaches the opponent's goal and scores. On the other hand, if a beginner concentrates solely on the forward paddle, his plays are mostly offensive. After a while, experience teaches a player to combine the two strategies.

Some models move players only in a vertical direction. Despite this simple motion, you can still enjoy the game, because a ball may rebound in different directions, depending on where it is struck. More advanced games, however, introduce horizontal motion to enhance the action. Now the goalie can move away from his goal area for an offensive action. He can smack the puck across the rink, score a point, then rush back to a defensive position.

More sophisticated hockey games are "joystick" and "puck-capture" types. A joystick control is pointed in the desired direction, and a highly maneuverable player obeys your command on the screen. Another touch of realism in some joystick games: when you direct a player backwards, he moves more slowly than in the forward direction.

If a game has a puck-capture feature, realism is carried even further. It works this way: if your paddle intercepts the puck, the puck won't rebound, but is "captured"—the puck fastens itself to your paddle and moves along with it. It's equivalent to a real-life player guiding the puck over the ice with his hockey stick until he is in position to whack it into the goal. In the video version, you can release the puck from your player by

**Fig. 3-5. Handball.**



pressing a button. It's done when the player is in a favorable position for scoring a goal.

That's not the only way a captured puck can be released. If two players collide on screen, the jarring bodycheck (or its video equivalent) frees the puck—just like the real thing.

### **Handball**

Generally a one- or two-player game, handball is found on most basic models. In one-player handball, however, the game is not true handball but simply practice. That's a useful function because practice is a reliable way to hone your video playing skill. The handball court, as shown here, is a three-sided field created by vertical and horizontal lines on the screen. In the two-player game of one manufacturer, contenders are positioned at the right side of the screen. They hit the ball alternately until one misses. For realism, the circuit doesn't allow a player to hit the ball twice in succession. If that's attempted, the ball magically passes through the player with no effect.

In another model, only one paddle appears on the screen at a time. After a ball is struck by one player, his opponent's paddle then appears to anticipate the next hit. The first player to score 15 points wins.

### **Squash**

This game resembles handball; there's one wall at the side of the court. A two-player game, the contenders

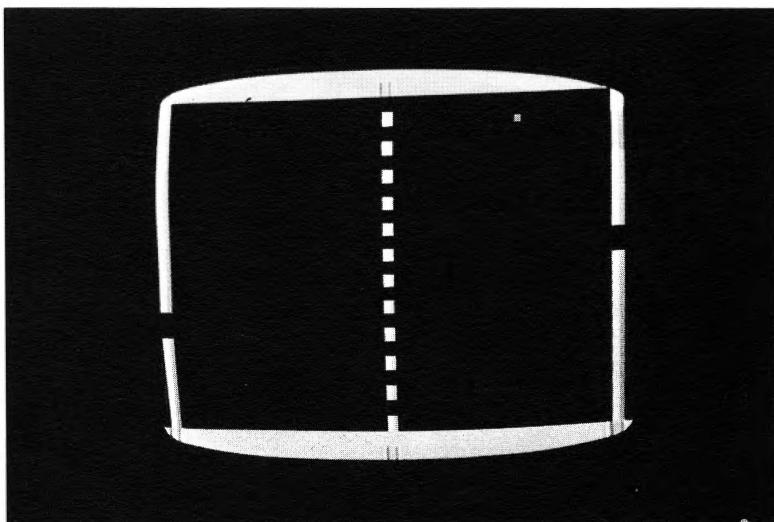
must hit the ball alternately (and the circuit is programmed to prevent two hits in succession by one player). When a player misses, his opponent receives a point, and the ball is served to the loser.

Playing squash may become confusing when the players move close together. Because movement is usually in the vertical direction only, you may, in the heat of play, find it difficult to discern your own paddle. That's why color, where each paddle has a different hue, is especially helpful in playing squash.

### Catch

This game is unusual in that it has no real-life equivalent. But as the name implies, the contest determines which opponent more effectively "catches" the ball. The playing field, as shown in figure 3-6, is bordered on four sides; yet, notice how an opening appears in left and right walls. Those openings can slide up and down by player controls to form a catching device. As the ball rebounds over the court, players maneuver their "holes in the wall" to snare the ball. Scoring a point may take from a few seconds to several minutes. (This game, incidentally, is found in Atari's Super Pong.)

**Fig. 3-6.** Catch. Openings in end walls can be moved by players.



# 4

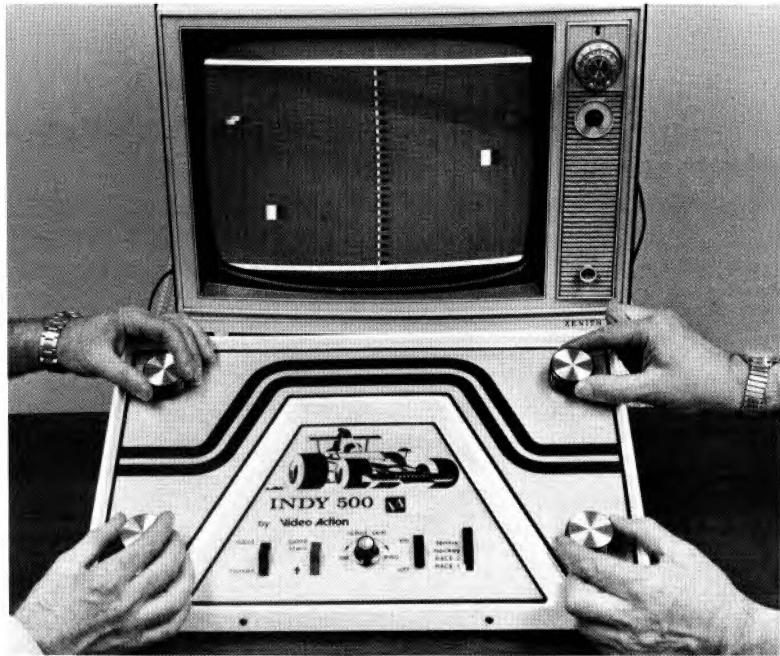
## How to Shop for a Video Game

Clerks who sell videogames hear the same questions over and over again. How many games will it play? Is it easy to hook up? Will it work on a color set? Does it use batteries or house current? The usual answers are these: videogames offer four or more types of play; yes, they are easy to hook up; many work in color; and almost any game can draw power from either batteries or house current. Let's examine these answers—plus other not-so-obvious questions—in some detail.

### Number of Players

A game advertises a number of players, but always count the number of control knobs on the console. It's a clue to how many people can play the game at once. It also clarifies a confusing statement like, "plays doubles tennis." In real-life tennis, doubles means four people,





**Fig. 4-2.** Four control knobs usually mean four people may play at once.

but it's not necessarily true in a videogame. Many models play doubles tennis, but provide controls for only two people. Each control operates two racquets simultaneously. By examining the console you'll see that two controls mean only two can play; four controls permit four to play.

### Solo Play

If a game offers this feature, you can play it without an opponent. It's handy because you may be in the mood to play but have no challengers. Another solo advantage: you can practice endlessly to improve your game.

A solo feature is described several ways; Solitaire, Practice and Robot, for example. When a game says something like "2 or 4 players," solo play may not be possible. It must state a phrase that has the number 1; for example, "1, 2 or 4 players". In one model, solo play is achieved by letting you control all paddles with one knob. In another game, a "robot" returns the serve and plays against you. You can adjust the challenge by turning a knob that controls the robot's skill, or ability to return the ball.

Any game can be played solo, after a fashion, even if the manufacturer doesn't say so. It's done by holding the



**Fig. 4-3.** Two control knobs usually mean two people, at most, can play.

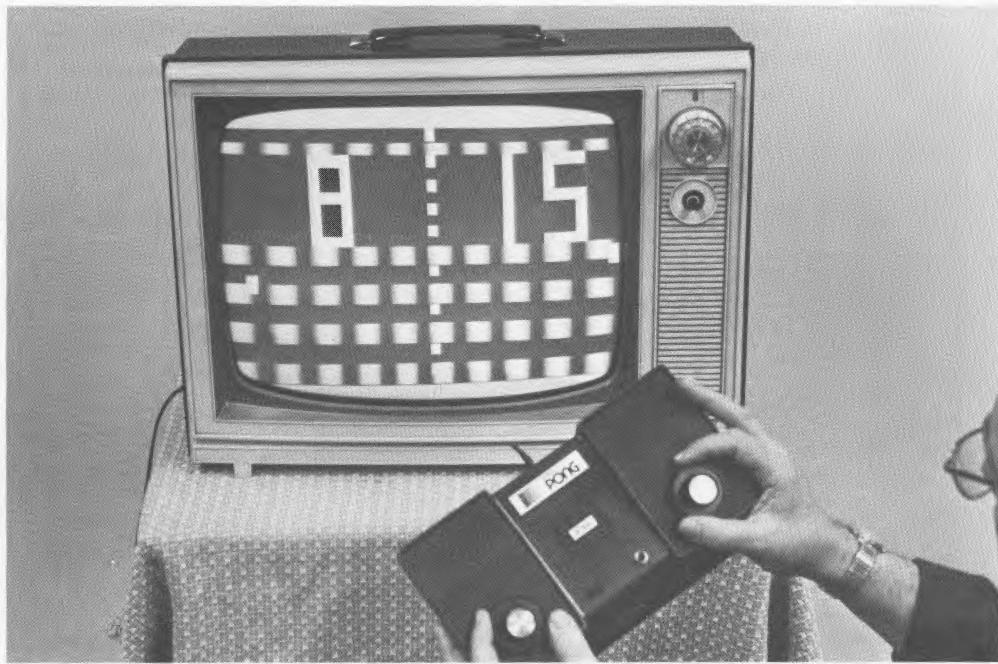
**Fig. 4-4.** Games with solo play are good for practice and playing alone.





**Fig. 4-5.** In solo game, player (right) competes against robot (left).

**Fig. 4-6.** Playing against oneself by grasping both knobs.

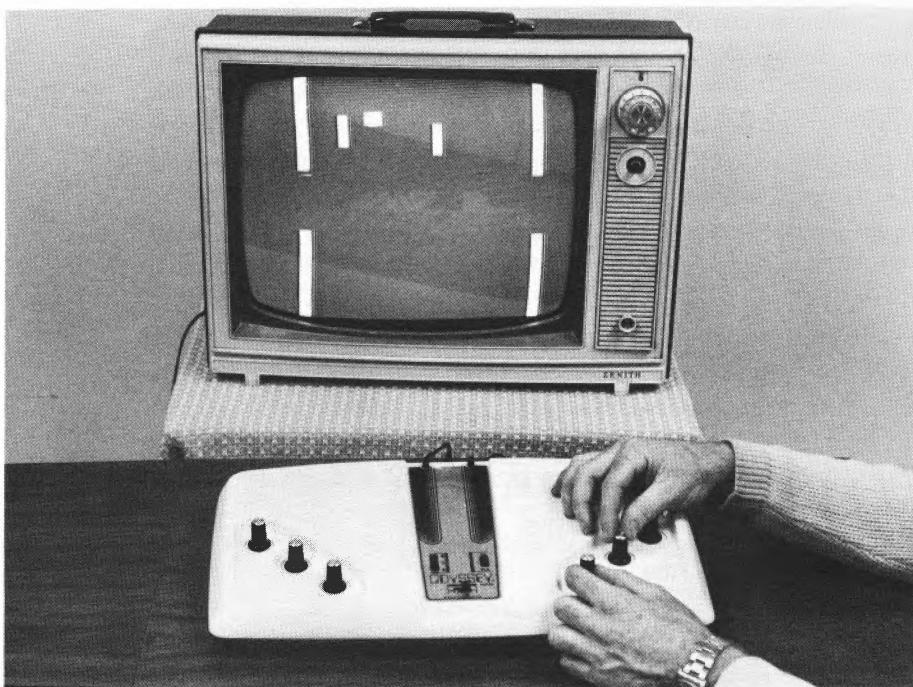


controls of two players, one in each hand, and operating them simultaneously. It's akin to the childhood trick of patting your head with one hand, while rubbing your stomach in circles with the other—then suddenly swapping the two. You'll often spot exhibitionists playing against themselves in the game department of large retail stores.

### Control Movement

Try all player controls. As described in an earlier chapter, you will control the play with a knob, lever or joystick. Most common is the single-knob control, which moves the paddle up and down on the screen. Vertical motion alone is ample for games like tennis and handball. When a horizontal control is added, you'll also be able to move the paddle left and right on the screen. Horizontal motion is an advantage in a game like hockey. When both controls are available, you'll grasp them—one in each hand—and coordinate their movements to position a player almost anywhere on the screen. In the joystick approach, you merely grasp the single lever and point it in the direction you wish to move the player. It combines horizontal and vertical movement into a single control.

**Fig. 4-7. Controlling horizontal and vertical knobs.**



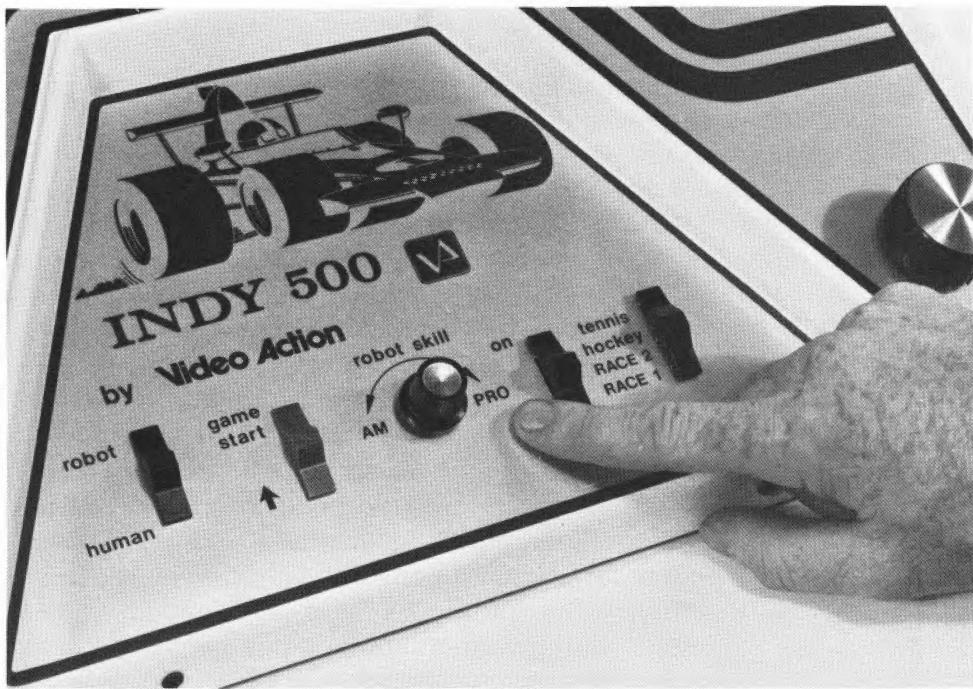


Fig. 4-8. Skill knob selects between amateur and pro.

### Control Feel

Because it's the one you'll use most of the time, the player control should feel comfortable in the hand and be easy to manipulate. Play a few rounds because it takes a while to get the feel of the mechanical action. Notice how it affects the action on the screen. Whether a paddle is controlled by knob, lever or joystick isn't important. What is crucial is that moving the control should cause a rapid response on the screen. Sluggish motion will limit your game when your skill improves. If a control is well-designed, you should be aware not of its movement—but only of the result you see on the screen. After a while, merely thinking of a movement should slide the player across the screen to a new position.

Which is best—knob, lever or joystick? Some players find that turning a knob gives precise control; others like the straight lever. Again, try them out and choose the one that feels best and imparts nimble motion to the ball on the screen. Besides giving fast response, a con-

trol must move the ball or puck to any point on the playing field.

The other type of control, called the joystick, moves in a full circle. (Its movements are described above, in the section titled "Control Movement.") Some joysticks produce tightly controlled action on the screen, while others lag slightly, that is, you may push the control and notice a slight delay in the movement on the screen. This may sound like a disadvantage, but many players enjoy that slight lag and describe it as "playing under water." A lag can improve realism in the game because an actual player and ball, unlike their electronic images, have inertia, which causes a slight delay in real-life movements. You will probably need a few minutes to grow accustomed to the delay, but you may enjoy the result later on.

### **Playing Speed**

A favorite technique for altering the degree of playing skill is changing the ball (or puck) speed. Nearly all games have some way to vary speed. In simple models, there is a three-speed switch labelled something like Beginner-Intermediate-Advanced. Or there may be a control knob, which can be set anywhere between slow and fast. When you first play a game, the high-speed position may appear impossible to play, but a week or so later, after your playing ability improves, you'll be toy ing with the game's highest speeds.

An interesting feature is variable ball speed. During the opening volleys, the ball bounces slowly across the screen, then some unseen force gently accelerates it as the game progresses. That happens only if neither player misses the ball. After a miss, the ball slows down, then speeds up for several volleys—until someone misses again. Ball speed, therefore, is automatic and simulates the course of a real game.

### **English**

As you play a game for the first time, note if it imparts English to the ball. A puck or ball that rebounds directly away, or at a shallow angle from the paddle, creates little excitement. In time, you'll want to swing your

paddle in a way that controls the rebound angle. In some games there are three possible reflecting angles, depending on whether the ball strikes the top, center or bottom of the paddle. More sophisticated games divide the paddle into eight sections. Each returns the ball at a different angle. It makes the game more satisfying to a skillful player than does an angle-changing switch on the board.

Another system for angling the ball lets you tilt the paddle, much as you would do in a real game. Such games have controls to twist the paddle as it encounters the ball.

### **Serve**

Newcomers often complain about games that serve the ball too fast. A flustered player doesn't have time to pull himself together and the ball whizzes by. As the beginner gains skill, that problem may disappear, but before you buy, observe how a game delivers the ball. There should, at least, be a short pause before the ball appears.

Another helpful feature is manual serve. Instead of automatically flinging out the ball, the game waits until you press a button and are ready for the serve. Some games offer a selector for either serve—manual or automatic.

In many games, the ball enters from one side of the screen. A few models, however, serve the ball from the screen's center. It may make the game difficult to begin and cause one player to lose several points before he can return the ball. Check to see if a ball served from the center moves across the court faster than you can jockey into position to return it. Such models can be annoying.

### **Handicap Control**

A novice won't have much fun against an experienced contender. So game makers equalize the difference providing controls for handicapping. With these controls, persons with different degrees of skill can mix and enjoy the competition. One technique changes the ball speed for one player only. The beginner always gets a

slower serve, or a slower return, from the advanced player. Another handicap system changes the racquet size; the better player must swing a smaller paddle or racquet, which demands more skill. Besides equalizing two adults, handicap controls let a young child compete against an older person with greater coordination.

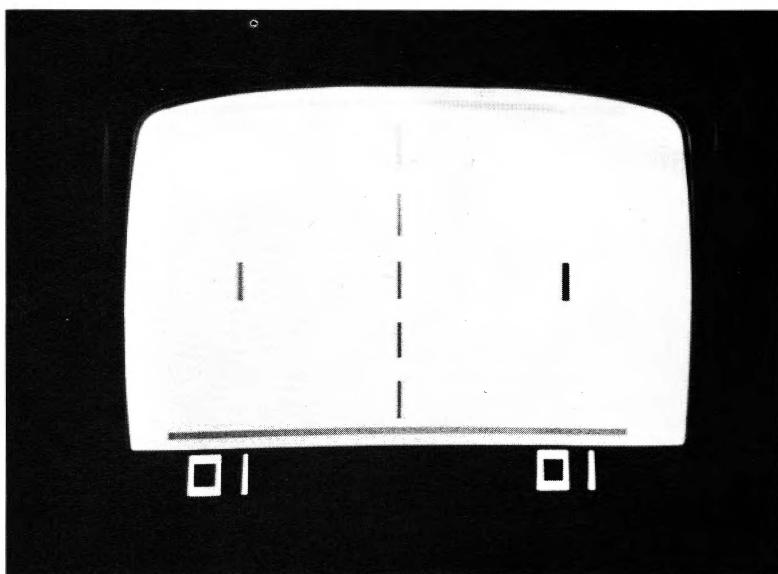
### Scoring

Any game that doesn't automatically keep score for you is primitive by today's standards. Adjusting a lever for each point is tedious. Most games provide on-screen digital scoring, meaning that a score appears on the TV screen in the form of numerals (not a series of bars). You may encounter digital scoring that appears not on the screen but on the game console. The trend, however, is to flash the score on the screen.

Look at on-screen scoring to see how the digits appear. In some models, the numbers are displayed continuously; in others, they appear only after a point is scored. Either method works, so long as the digits don't interfere with the game's visibility. A few rounds of play reveal the answer.

Some videogames I tested had scoring defects.

**Fig. 4-9.** Scoring digits, displayed on bottom in this game, may appear anywhere, but shouldn't interfere with play.



Digits mysteriously jumped a couple of points and rendered the score meaningless. Because it wasn't a problem in the game's circuits, but in defective samples, try to detect the problem in the store. See if the score advances and registers correctly during one complete game.

### Remote Controls

Games with a remote feature, where controls are mounted on cords, allow great freedom for players to sit away from the console. Crowding grows important for games that allow four people to play simultaneously. Although it's possible to play these games on the console, remote controls permit more flexibility in playing positions. Some manufacturers solve the four-player problem by locating two controls on the console, and two remote controls on cords.

Expect some tangling in remote control cables. If, after each playing session, you coil and stow them out of the way, they'll last longer, and won't trip people walking across the room.

### Repeating Patterns

In many games, the ball becomes trapped between players' paddles and repeatedly bounces back and



**Fig. 4-10. Remote controls.**

forth. This is known as locked motion: the ball rebounds indefinitely unless a paddle is moved. Such repeating patterns occur most frequently in games with little or no English (which decreases the chance of trapping the ball). Locked motion is not usually a serious disadvantage, but there's an exception: if the ball is hopelessly imprisoned between paddles, one player must withdraw a paddle to release the ball. That player usually loses a point in the process. You can often spot this problem in games with little or no English after playing them a while.

### **Color**

If you own a color TV, try to purchase a game that displays in color. It's not only more interesting to view, but color plays a practical role. When players appear in different hues, they're easier to distinguish in the midst of an exciting round.

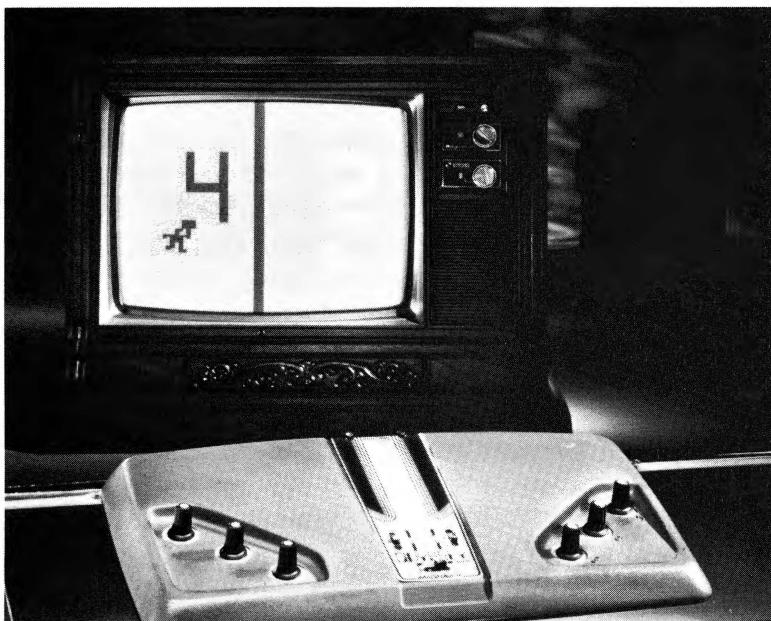
Color adds realism. During a hockey game, for example, the background turns blue (to suggest ice), tennis plays on a green court and handball is against a brown background.

Color grows more important in advanced games that have cartridges, which are described in a later chapter. Your enjoyment of these games will be curtailed unless you play them through a color set. Colorful patterns and images are not as entertaining when viewed in black and white.

If you don't have a color TV, but plan to purchase one in the future, you can still buy a game with a color display. Like TV broadcasts, the games are compatible with any set. Thus you can play the game in black and white now, then hook it up to a color set at a future date, and play in color.

There are two precautions when considering color. You will see games that boast "For color and black-and-white sets" or "Color display." The first statement does not guarantee the game will appear in color. It means, rather, that a black-and-white game is able to appear on a color set. The statement is confusing because it sounds like the game plays in color.

The words "color display" are more specific. They



**Fig. 4-11.** Color makes players easier to distinguish.

mean the game will play in color on a color set. One game manufacturer clearly states it another way: "Game plays in color on color televisions."

### Time-Out

If you're interrupted by a telephone call, it's convenient to "freeze" the action until you return. Many games, however, continue to operate whether you're at the controls or not. It means that during time-out the continuity of the game is lost. You must reset to zero when you return and begin again. In higher-priced models you can press a time-out or hold button to suspend the action until you return.

On some games you may improvise your own time-out feature. It's done on models that have an automatic-manual serve button. By flicking the button to manual, the serve is halted—allowing you time out.

### Realism

Game makers attempt to enhance interest by hints of realism on the screen. In the lowest-cost games, a mere line of light represents a player, paddle or hockey stick. Higher-priced models show an actual outline of the object—human-like shapes for players, or wheeled vehicles for racing cars. Although these images are only symbols, they make the game elements more attractive

to the eye. They also help you distinguish between players that are jammed together on the screen.

The sounds generated by videogames don't vary much. If a game simulates a raucous noise, like road-racing or a shooting gallery, however, sounds may be objectionable in the quiet of a home. Few games have volume controls to correct the problem, but it can be reduced to a comfortable listening level by a piece of cardboard and tape, as shown in Chapter 6.

### Other Shopping Tips

Watch out for the exotic names sported by videogames. You will soon discover that different names often mean the same thing. For example: hockey, soccer and goal are close in character, as are handball, squash and racquetball. Solitaire, or a name that suggests one player, means you can play the game alone.

Finally, when you try a game in a store, be aware that demo models suffer considerable abuse. In a few weeks they sustain the wear and tear equal to years of home use. Thus, before you reject the game you're playing, be sure it isn't damaged. Be wary of the TV set, too. In many stores, the TV fine-tuning control is not adjusted for a clear image on the screen. Ask the clerk to tune it properly or reach up and tweak the fine-tuning yourself until the game appears clearly on the screen. If colors are runny and distorted, it's another sign of a misadjusted TV set, rather than a defective game.



**Fig. 4-12.** King Kong plays Ping Pong.

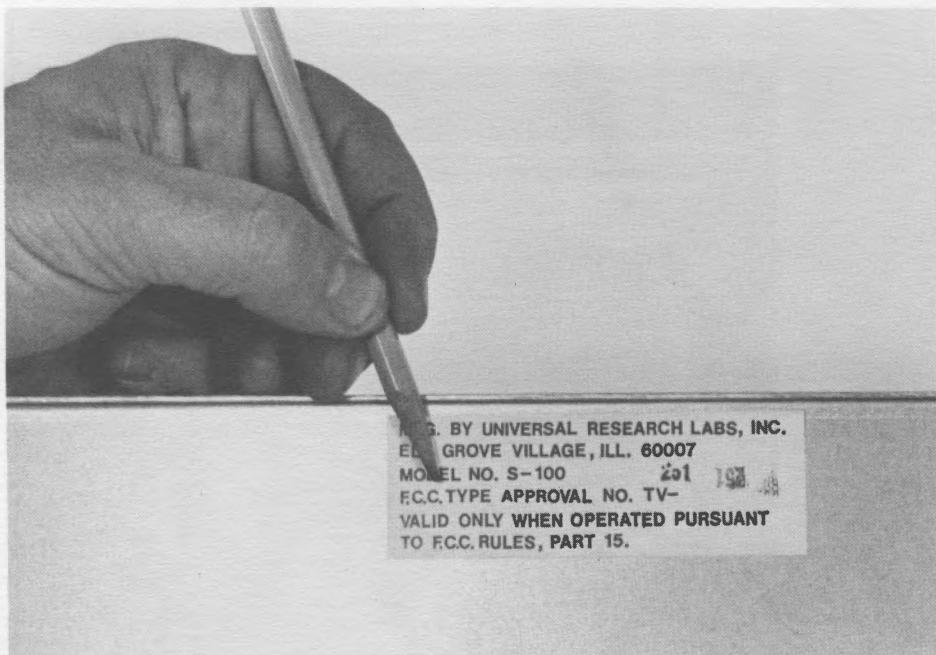
# 5

## Hooking It to Your TV Set

The engineers deserve congratulations. Videogames would have died a-borning if they required professional installation in every TV household. The cost would be staggering. Imagine a serviceman arriving at your home, lugging the TV set away from the wall, undoing the back cover and exploring the deepest recesses of the chassis. The installation would probably cost more than the game itself.

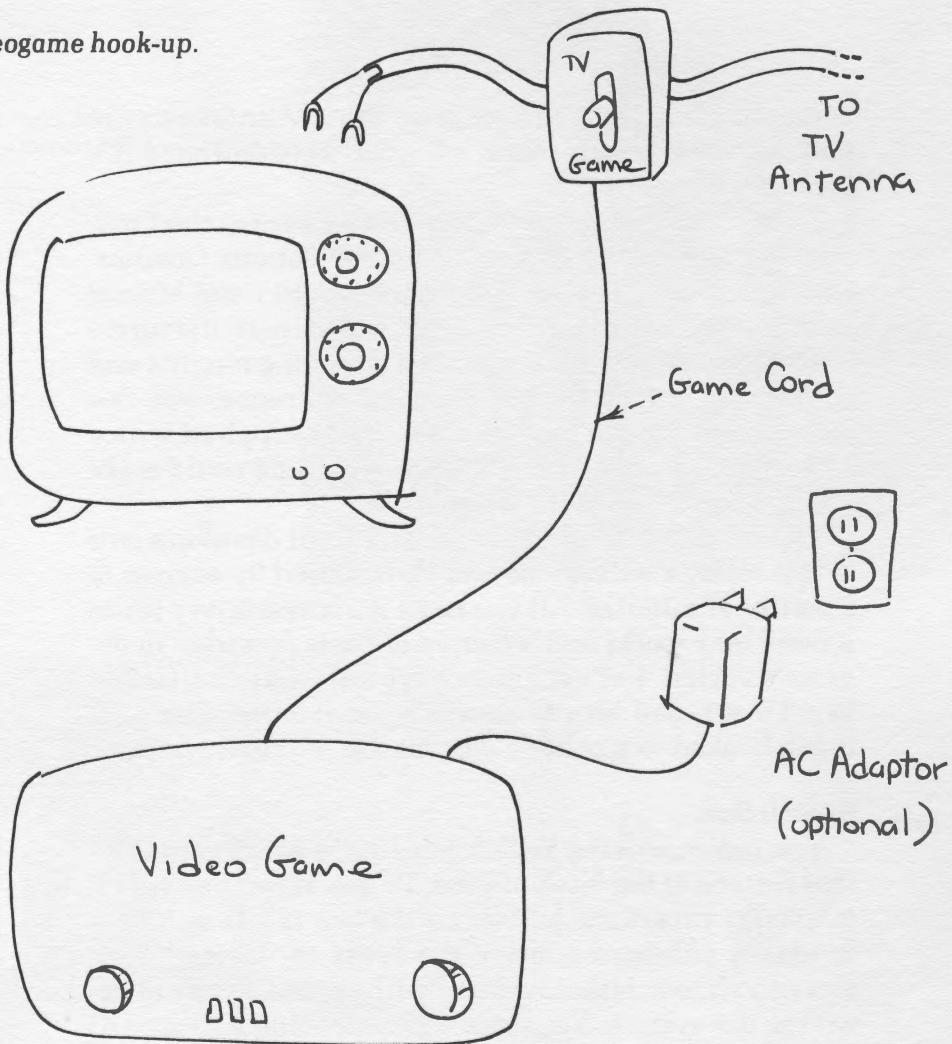
Luckily, an ingenious technique weds game and TV set. Inside the game the engineers provide a miniature TV transmitter adjusted to "broadcast" on Channel 3. All the game's picture elements—for example, court, ball, paddle—are joined to the channel, much as a television studio puts voices and images over a TV broadcast. The game, therefore, enters any TV set tuned to

**Fig. 5-1.** TV games must carry FCC approval.



## Switch Box

Fig. 5-2. Videogame hook-up.



Channel 3. Because the game signal electronically resembles a regular telecast, it can be received on any TV, regardless of make or screen size. That's what eliminates any professional installation.

Before that technical trick could work, one obstacle remained. Our men in Washington sniffed these new-fangled games and wondered about interference. If they broadcast on regular TV channels, games carried the risk of disturbing other sets. Even as a viewer enjoyed the game on his own TV screen, maybe the video signal could leap through walls and fracture pictures on the neighbor's sets. (TV signals go through plaster and wood with ease.) Another dreaded possibility was a

game on Channel 3 sneaking up the TV antenna wire and spewing interference all over neighborhood TV screens.

To nip that possibility before the games reached millions of homes, the Federal Communications Commission announced that all TV games would need official approval before going to market. Today, manufacturers meet the requirement by carefully sealing circuits and cables that might release stray interference. For this reason, don't cut or lengthen any cords supplied with a videogame. It voids the FCC approval—and could make you unpopular with the neighbors.

The result of these technical and legal developments is that today's videogame can be installed by anyone in a matter of minutes. All you need is a screwdriver (even a dime may work) and a couple of parts provided in the game's carton. Let's see how a typical game is attached to a TV set, and how to handle special cases, like a set that's hooked to a cable TV or master antenna system.

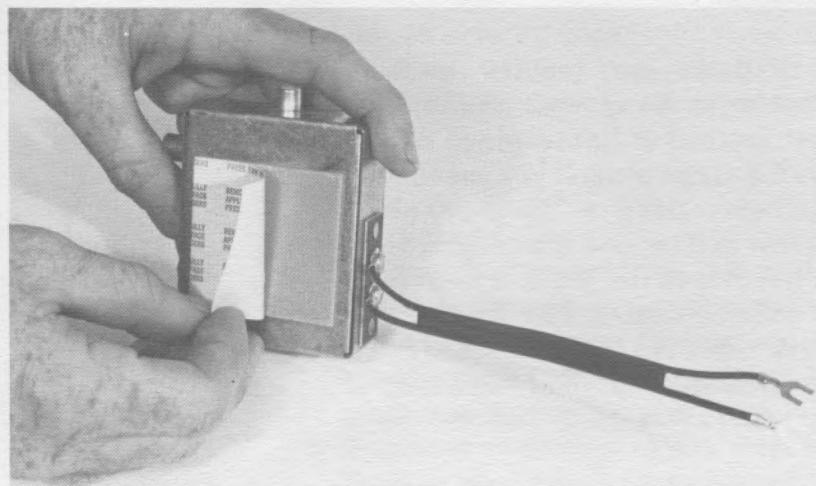
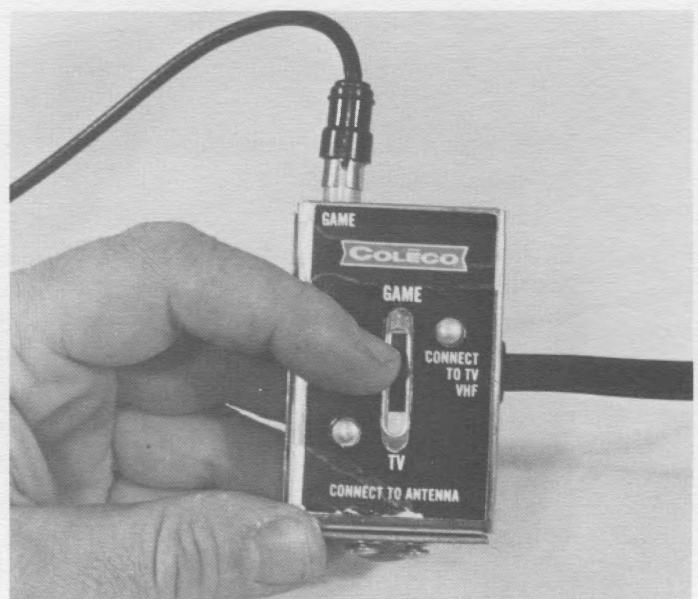
### **Switch Box**

You can mount the switch box first, a small container that fastens at the back of your TV set. When you watch television programs, a lever on the box is left on "TV"; to play a videogame, move the lever to "Game." Thus you can choose either pastime without the bother of rewiring the system. Your game may provide a square of adhesive tape or a hook to hold the switch box to the back cover of the TV set.

Before you fasten the switch box, attach its wires to the TV set. The job begins by examining the antenna terminals at the back of the TV. In most instances, you will find a flat brown antenna wire, known as twinlead, connected to those terminals. If your set was purchased after 1964, it should have two sets of antenna terminals; one marked "VHF," the other "UHF." Because VHF is the most common system (it covers Channels 2 through 13), the twinlead wire is usually connected to this point. All popular TV games hook to the VHF terminals. Remove the two twinlead wires with a screwdriver.

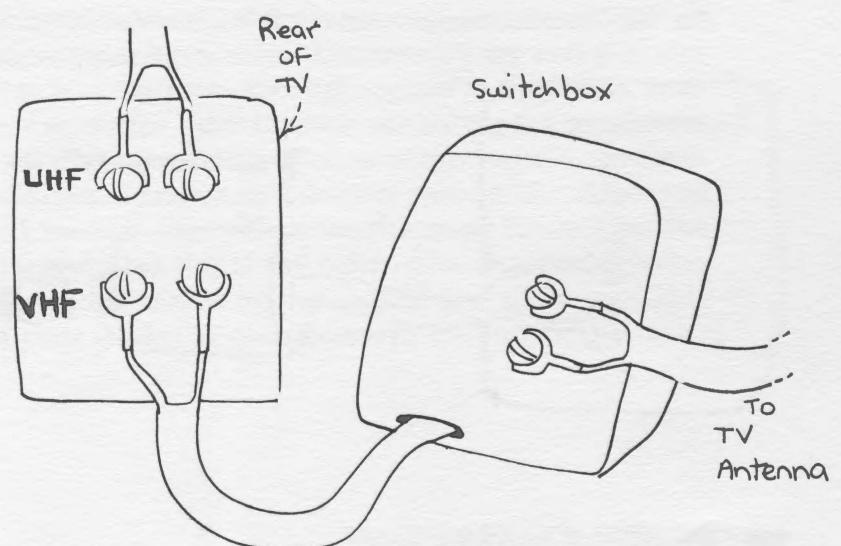
Notice that a similar twinlead wire emerges from the game's switchbox. Fasten its two wires to the empty

**Fig. 5-3.** Switch box chooses between game and TV viewing.



**Fig. 5-4.** Adhesive backing on switch box.

**Fig. 5-5.** Switchbox hook-up to TV.



VHF antenna terminals on the television set, as shown in figure 5-5.

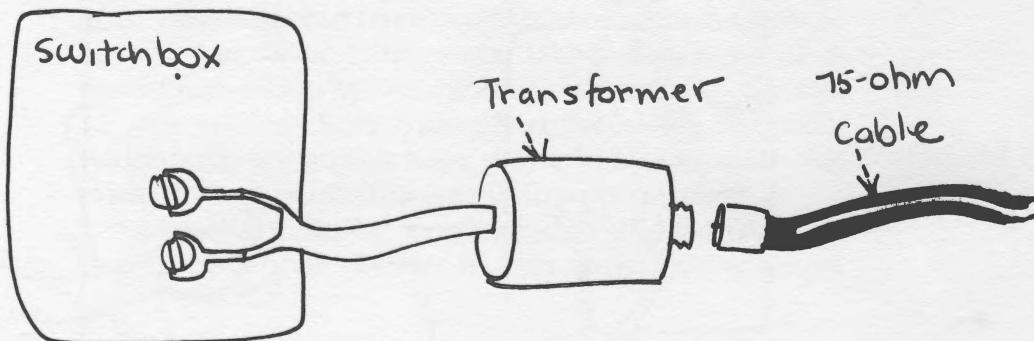
There's an important precaution about that bit of twinlead running from the switch box to the TV set. Never lengthen it. Excess wire would cause the game to broadcast interference. For the same reason, don't extend that wire to more than one TV set at a time. Also, never connect that wire (the short one from the switch box) to a TV antenna outlet on a wall (found in homes that are connected to a master antenna system).

Finally, mount the switch box to the back of the TV. Look for a clear spot on the cabinet, peel the protective paper from the adhesive and stick the switch box in place.

### Cable and Master Antennas

If you receive TV programs by cable TV or a master antenna system, the installation may require one more part. You can tell by looking at the antenna terminals on the back of your TV set; instead of flat twinlead there's a round black cable with a metal plug. If you see this arrangement, you'll probably need a "75-to-300-ohm" transformer. It costs a few dollars and is available from the dealer where you purchased the game, a local electronics store or a TV service dealer. The transformer matches the round black cable (known as 75-ohm coaxial cable) to the flat brown line (300-ohm twinlead). If your set has a switch on the rear marked "300-75," place it on "300."

Fig. 5-6. Transformer for cable.





**Fig. 5-7. Game cable (in hand) runs between console and switchbox.**

### **The Game Cable**

About fifteen feet long, this cable joins the game console to the switch box on the back of the TV. Unroll the cable from the game console and plug it into the switch box. Because the cable carries an electrical signal from the game to the TV, the wire must not be extended, shortened or altered in any way. Besides causing interference, an extension could upset the electrical balance of the cable and mar the game image.

### **Hooking to Several TV Sets**

Most homes have more than one TV set and you may want to play the game through any set in the house. If so, there's an easier solution than unhooking the game from one set and reinstalling it on another. Simply purchase an additional switch box for the second TV. After you install the box, you can unplug the game cable from one TV set and plug it into the other. The changeover takes only seconds. Extra switch boxes are often available from your dealer as an accessory.

## A Source of Electricity

You have a choice of electrical power for video-games—batteries or house current—and there are pros and cons with either method. Most games take four or six ordinary flashlight batteries. An advantage of batteries is eliminating a power cord between the game console and a wall outlet. There's one less wire to bother with and you won't have to search for an AC extension cord to reach a distant outlet. Because the game is tethered by only one cable (to the TV set), a battery-operated game is also easier to move about the room to a new location.

On the other hand, batteries go dead. Another problem is that they may leak after a couple of months of inactivity. A jelly-like substance oozes from the cell and corrodes metal in the battery compartment. Leakage can also disturb the electronic circuits. Always remove batteries from a game that's stored for more than a few weeks.

You can solve the battery problem in two ways. First, don't purchase ordinary cells. They may be the least expensive, but they are the most short-lived. For not much more cost, you can obtain *alkaline* cells and double a game's playing time. Ordinary batteries power a game for about 40 playing hours. Because playing hours are not continuous, they may take several weeks or months to accumulate.

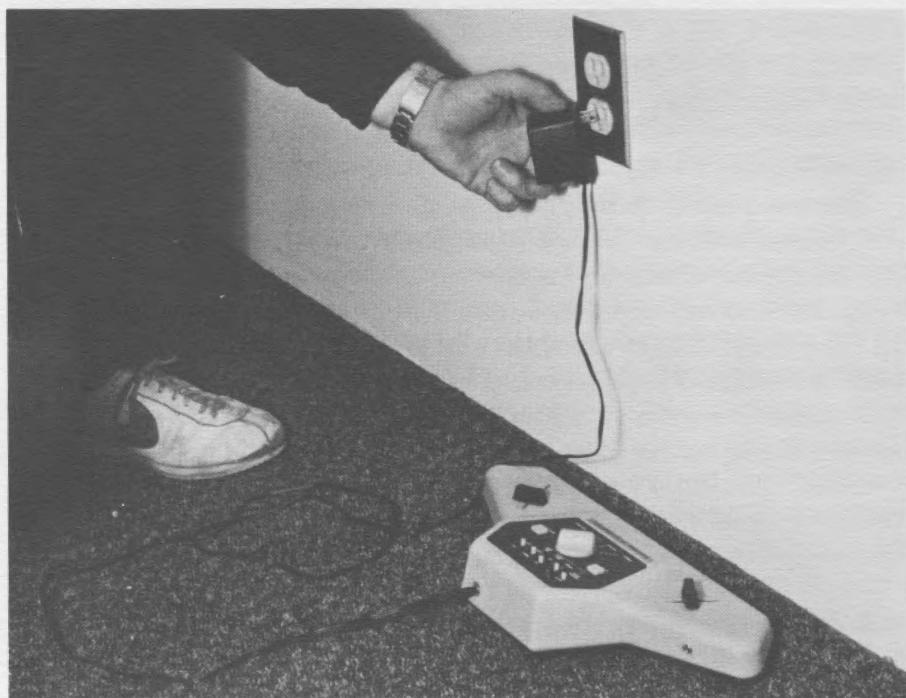
Solving battery failure when you're playing is simple: purchase a second set of batteries. If you wrap spare batteries in a plastic bag and store them in a freezer compartment, they should remain fresh three or more years. Batteries left at room temperature usually go dead in a year or less.

No batteries at all are needed if you operate your game from an AC adaptor. Although some manufacturers supply an adaptor as part of the original game, most of them offer it as an optional accessory. It's a handy device, especially if you don't mind the extra cable across the room. If you obtain an adaptor, be sure it's the one recommended by the game manufacturer. If it has the wrong specifications, it could ruin the electronic circuits inside the game.



**Fig. 5-8.** Installing batteries in game console.

**Fig. 5-9.** AC adaptor plugs into wall outlet.



### **Choosing a Channel**

Your videogame fools the TV set into believing it is a television program arriving on a regular channel, and the game is usually adjusted at the factory to play through Channel 3. Even if a TV station broadcasts in your area on Channel 3, there's a good chance the game will play with no problems. When you change the switch from TV viewing to the game position, you are also disconnecting the outside antenna. This prevents a TV program on Channel 3 from entering the set and disturbing the game.

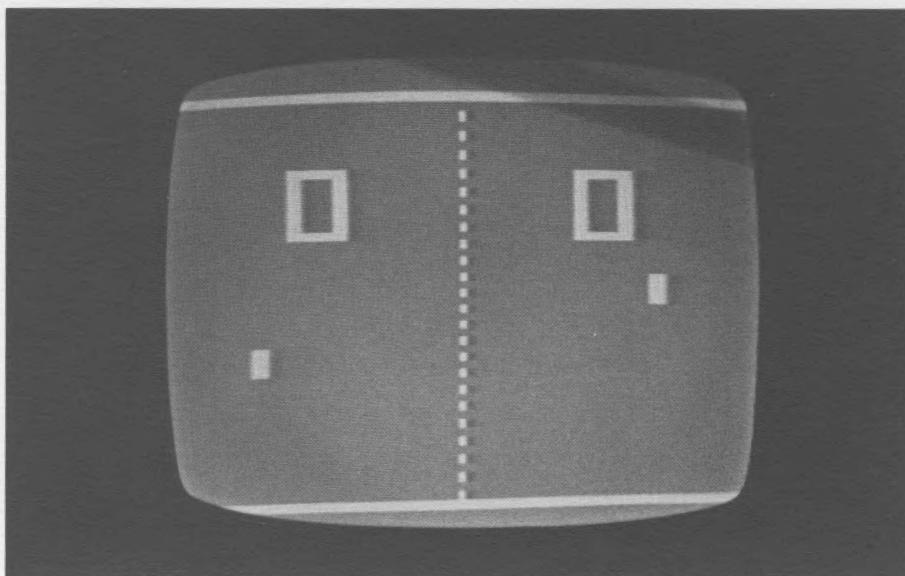
In some areas, however, you may notice interference patterns on the game display. It could happen if you are located close to a strong TV station broadcasting on Channel 3. To eliminate this interference, many games may be reset to Channel 4. This is usually done by turning the game console upside down and locating a switch marked "3-4." Move the lever to "4." In some models, you must remove the batteries to reach the switch. In others, you insert the eraser end of a pencil into a slot on the underside of the cabinet.

In some parts of the country you can receive both Channels 3 and 4. Choose the channel with the weaker station for playing the game. It causes less interference to the game image.

### **Adjusting the TV Set**

There's a good chance your game will appear on the TV screen with no further fuss. But a few touch-up adjustments are worth trying for the utmost clarity. Begin with the fine-tuning knob on the TV set, adjusting it until the game outlines are clear and strong, much as you'd tune a regular TV program. (If your TV has automatic fine tuning, switch it off while you make this adjustment.) Examine the lines of the image closely. If you see "ghosts" (multiple images), reduce them with the fine-tuning control. Vertical lines in the picture should be straight.

Next, adjust the brightness control. Do not turn the brightness control up fully. Use only brightness sufficient to give you a comfortable view of the boundary lines. Touch up the contrast control for the most pleas-



**Fig. 5-10.** Adjusting TV set: First, turn brightness down until image is weak (as above). Then raise control slightly for medium brightness. Avoid high brightness setting.

ing balance between lights and darks in the picture. Do not use excessive contrast. If you have a color set, and the game can display in color, juggle color and tint controls for strong, true colors. The tint (or hue) control should be manipulated so colors advertised by the game manufacturer appear on the screen. They usually include the three primary hues of color TV: blue, red and green.

Most videogames generate sound through their own loudspeakers. Thus there is no need to hear sound from the TV loudspeaker. It's a good idea, in fact, to turn the TV volume fully down to remove any sound from the TV speaker while the game is being played. Sometimes the TV speaker produces a harmless, but annoying, buzz when the videogame is on. There's no need to hear it.

Some games send their sound through the TV speaker, so you will have to adjust the TV volume to a comfortable listening level. Turn the fine-tuning control, too, for the strongest, purest sound. If the fine tuning is misadjusted, sound will suffer from that annoying buzz mentioned above. Finding the right setting for clear sound also affects the picture quality, so turn the fine

tuning until you discover a setting that gives both good sound and good picture.

### **Room Lighting**

When watching television programs at night, it's customary to have some illumination in the room. It's easier on the eyes. It's also good advice while playing a videogame. A small lamp should provide background lighting to soften the contrast between the screen image and rest of the room.



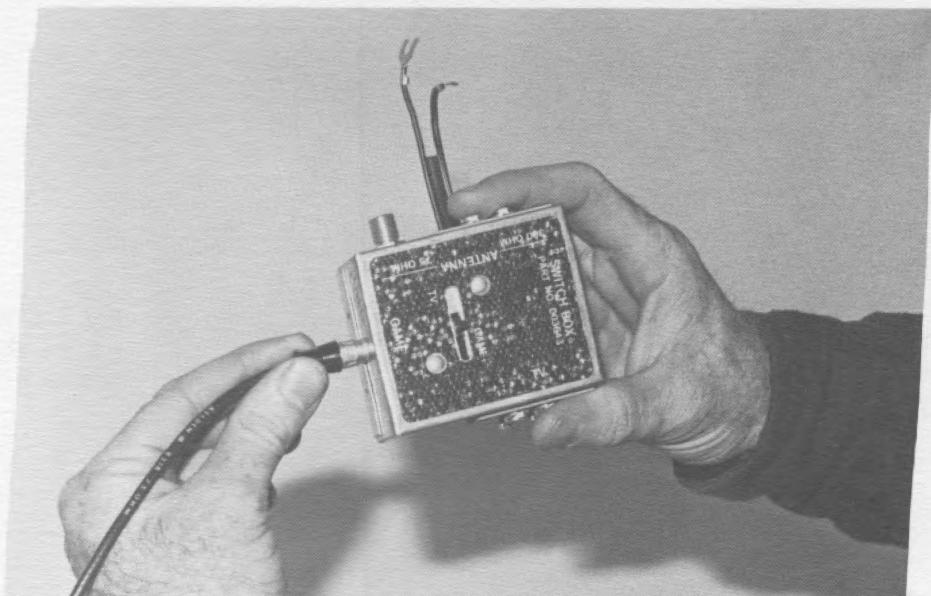
## What to Do in Case of Trouble

If your new game plays without fault for the first seven days, chances are it will play that way for the next seven years. There are no tubes to wear out, and solid-state devices inside the circuit have a life expectancy of a hundred years. When failure does happen, it's often in the mechanical parts (such as knobs or levers) or the cables. Never yank out plugs by pulling on the wire (grasp the plug instead), don't place the game on a hot surface and don't spill liquids on the cabinet. Treat a game with care and it should last for years.

### Warranties

But much can go wrong in those first seven days. Manufacturing is not a perfect art and defects sneak through a production line. Fortunately, just about all video-games are covered by a ninety-day warranty on parts and labor. Within that time you can usually exchange a

*Fig. 6-1. Always grasp plug, not wire, when removing game cable.*





**Fig. 6-2.** Fill out card to assure warranty.

defective unit over the counter at the local dealer. Beyond three months—and usually up to a year—the manufacturer may repair the game for a labor charge only, if you return the game via parcel post. Beyond a year, some companies perform repairs at a flat fee. Hold on to the instructions furnished with your game for these details. And save those form-fitting plastic pieces that protect the game from shipping damage.



**Fig. 6-3.** When game come off the shelf, ask clerk to check it out.

### **In the Store**

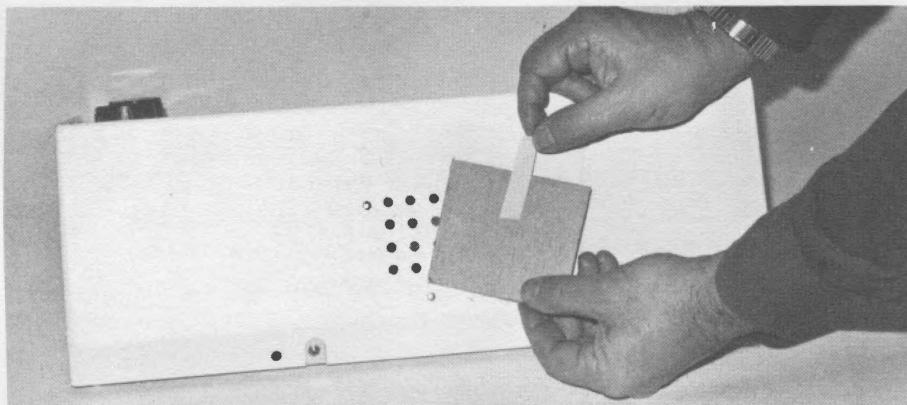
When you shop for a videogame, be wary of "returned merchandise"—that is, a game that was purchased by another customer and then returned to the store. The game could be in good condition, but often the instructions are missing, or an important item, like a cable, was not returned. It's annoying to bring home a new game and be unable to play it immediately. Avoid any shortages by asking the store clerk to open the box and check the contents. You can almost always spot returned merchandise by examining the cables. Instead of forming neat coils, they lie willy-nilly in the box. Compartments in the plastic foam are empty, or the game's front panel is scratched or greasy. The loss of factory freshness is usually apparent.

There's another reason to check a game in the store. You could receive a game that was returned once before as defective merchandise. Instead of being removed from stock, it somehow goes back on the shelf. To avoid such defects, ask the clerk to operate the game, and check for the required pieces and accessories.

### **Read the Instructions?**

Manufacturers of consumer goods bewail the public's practice of bringing a new product home, turning it on and flicking all the switches. If the product doesn't work, then the buyer might look at the instructions. There's evidence to support the manufacturer's lack of faith. When appliance servicemen go on house calls, the trouble they encounter more than half the time is a plug not inserted in the wall outlet.

There's good reason for reading the instructions packed with your videogame. Put the game through each of its paces as detailed by the manufacturer and you'll quickly discover defects covered by the warranty. Here's a sample of what happened to my purchases: One game worked well until one of the paddles mysteriously grew longer on the screen. As it stretched to three times its original size, it gave a player an unfair advantage over his opponent. The game became impossible to play when the paddle finally filled the screen from top to bottom. In another game, the paddle



**Fig. 6-4.** Tape and cardboard reduce excess volume from loudspeaker.

wasn't completely mobile over the screen from top to bottom. Because it stopped inches from the bottom, my opponent could easily whack a ball through the opening. Games with such outright defects should be exchanged.

### **Heavenly Peace**

Part of the excitement of a videogame is in the beeps, squawks and other sounds that heighten the action. They delight everyone in the family—for the first day or two. Because they're electronically produced, the sounds have a purity that gives them tremendous penetrating power. They can often be heard throughout the house and prove distracting to the nonplayer. The culprit is the manufacturer. Few of them provide a volume control for adjusting the game sound. It's preset at the factory. That's not a problem with games that generate their sounds through the TV set. You can adjust the TV to a comfortable listening level. The trouble is, most games produce their own sound, and don't play through the TV speaker.

Here's a simple way to remedy a noisy videogame. As shown in figure 6-4, place a piece of cardboard over the speaker holes. While the game plays, slide the card until you hear the desired volume, and tape it in place.

### **Hot Adaptors**

Almost all videogames can eliminate batteries by operating from an AC adaptor. Some adaptors I tested, however, generated an unusual amount of heat. If you've purchased one, check for overheating after the game operates for about a half hour. The adaptor should

produce only gentle warmth. If it grows hot to the touch, it could mean the adaptor is defective or has too little capacity.

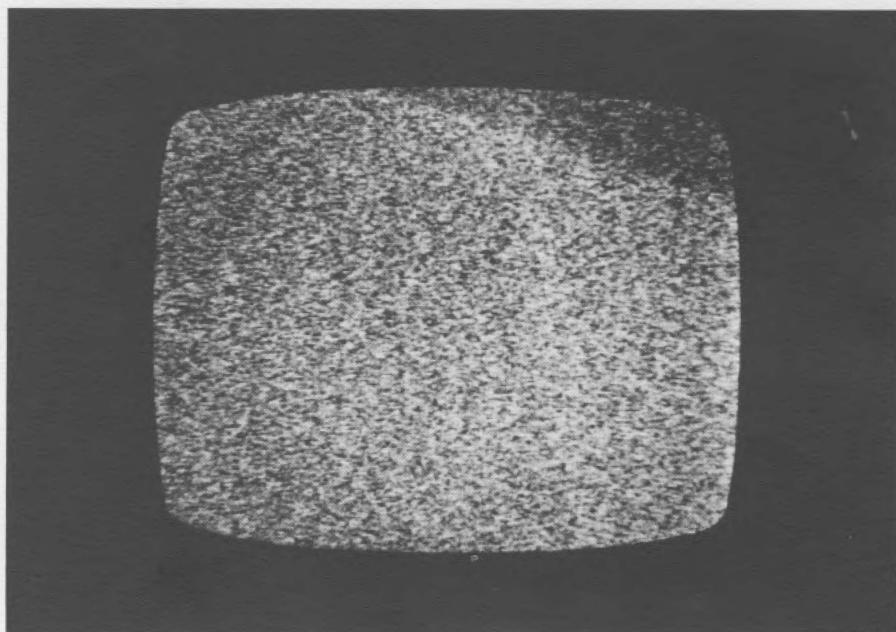
When you're finished playing a videogame, the AC adaptor continues to draw slight power from the wall outlet. It is not disconnected by the "on-off" switch on the game console. Although most manufacturers do not mention this in their instructions, it's a good idea to switch off the game after play and remove the AC adaptor from the wall outlet. The amount of electricity drawn by the adaptor is only a few watts, but unplugging it from the outlet eliminates any wasted power.

#### No Game Appears on Screen

Even if your new game is perfect, other troubles could affect its performance. Let's say you turn on the game and the TV screen fills with "snow." Here are the usual reasons.

The cord between the game and the TV may not be plugged in. The game cable is easily jarred loose if someone walks across the room and snags it underfoot. If it's alright, check if the AC adaptor is plugged into the

**Fig. 6-5.** "Snow" on TV screen usually means a disconnected game cable.



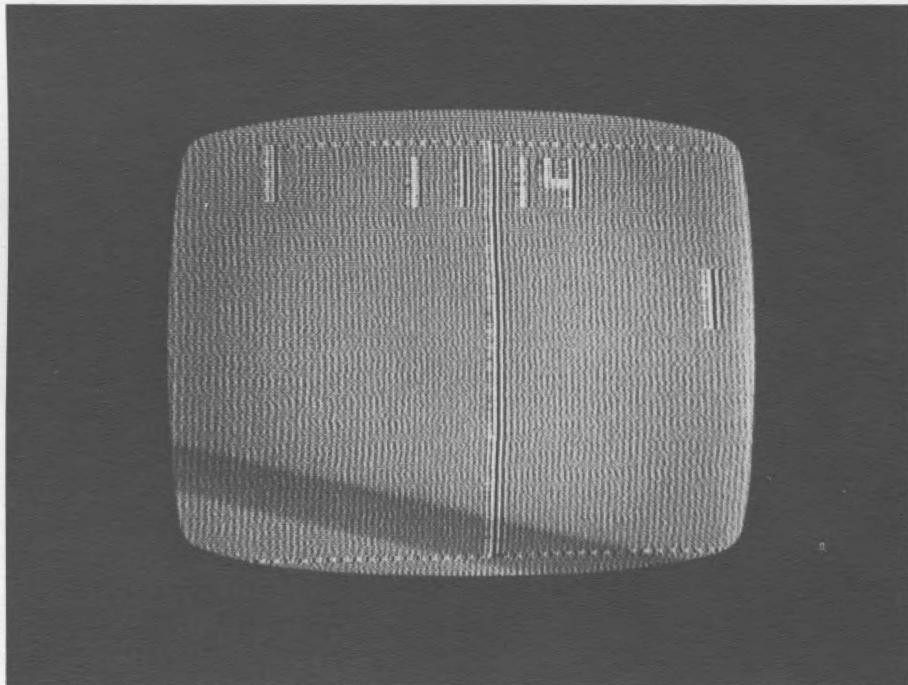
wall socket. Look at the connections behind the TV. All wires must be securely fastened to the antenna terminals. Did you remember to switch from "TV" to "Game" at the back of the television set? Maybe the batteries are dead. Determine if the TV channel selector is on "3," or the correct channel for game playing.

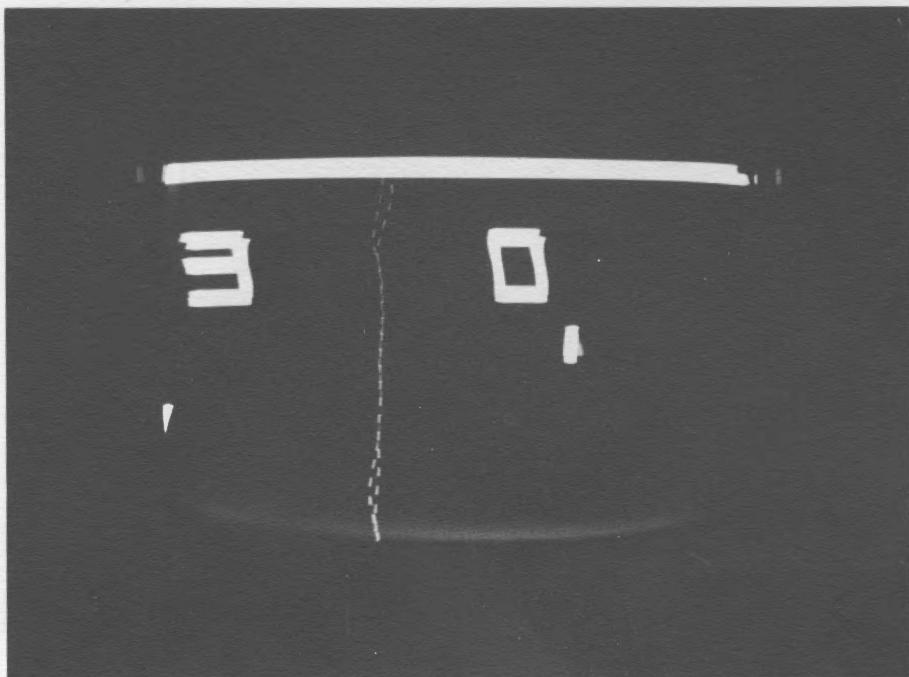
The TV set may also be at fault. Check it by switching back to "TV" and looking for normal program reception on a local channel.

### **Blurry Game Picture**

This symptom is often caused by a misadjusted fine-tuning control on the TV. As you vary the knob, look critically at the image and adjust for the clearest picture. Some sets have automatic fine tuning, which locks on a TV station but not on the game. Switch off the automatic fine tuning, and adjust for a sharp game image. Note that a fine-tuning adjustment for the game on Channel 3 may not be the same as for a TV station on Channel 3.

**Fig. 6-6.** Fuzzy game usually means TV fine-tuning needs adjustment.





**Fig. 6-7. Jittery image.**

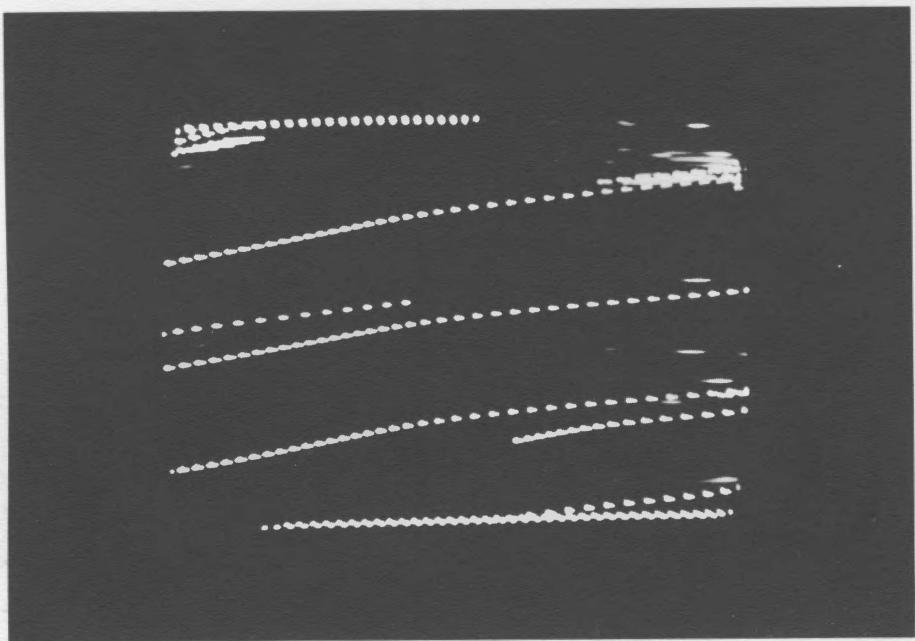
Blurry game pictures are also caused by a faulty connection at the game's switch at the rear of the TV set. Examine the wires and be sure none has worked loose.

### **Jittery Image**

If fine tuning the TV doesn't quiet a jumpy picture, you may have to replace the batteries. Jitter is a sign of low battery voltage. Before you change batteries, try adjusting the TV's vertical-hold control. It occasionally causes the same problem.

### **Buzzing Sound in TV**

It is normal for the TV speaker to produce an annoying rasp while your game is on. Since most games generate their own sound, turn down the TV volume. Games that generate sound through the TV speaker may also generate a buzz. Getting rid of it requires careful adjustment of the set's fine-tuning control.



**Fig. 6-8. Slanting lines mean loss of horizontal-hold control.**

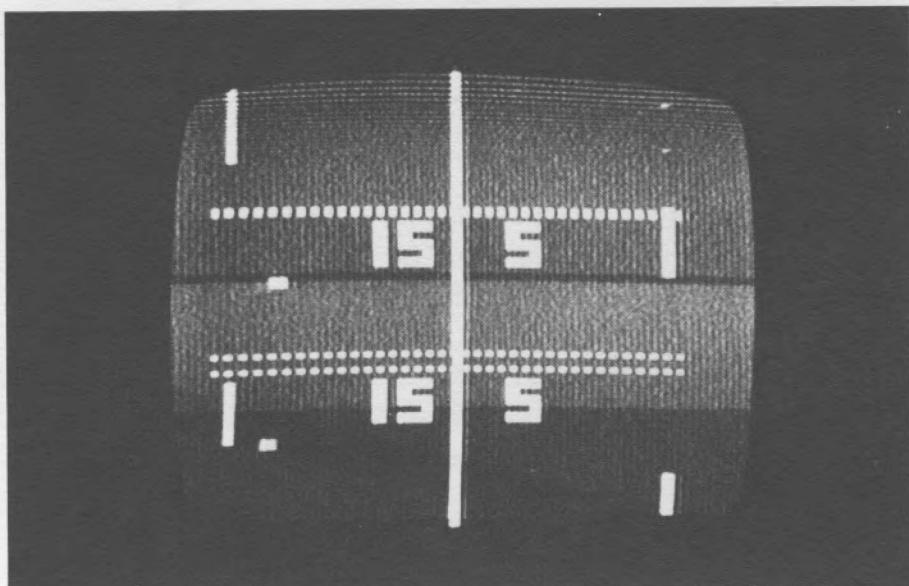
### **Slanting Lines**

When the game image tears into diagonal stripes, it usually means loss of horizontal control by the TV set. It's corrected by adjusting the TV's horizontal-hold control. On some sets, the control is at the rear and marked horizontal frequency. While adjusting, watch the screen and turn the control in the direction that thickens the stripes and reduces their number. If lines grow thinner, you're turning the wrong way.

The new setting of the horizontal hold may stabilize the game, but not be correct for regular TV reception. If your hold control is at the back of the TV, the new setting will be inconvenient because you'll have to reset the adjustment each time you switch between game and TV. Try to find a compromise setting that gives stable images for both game and program. Sometimes you can cure slanting lines in the game by flicking the game's on-off switch once or twice.

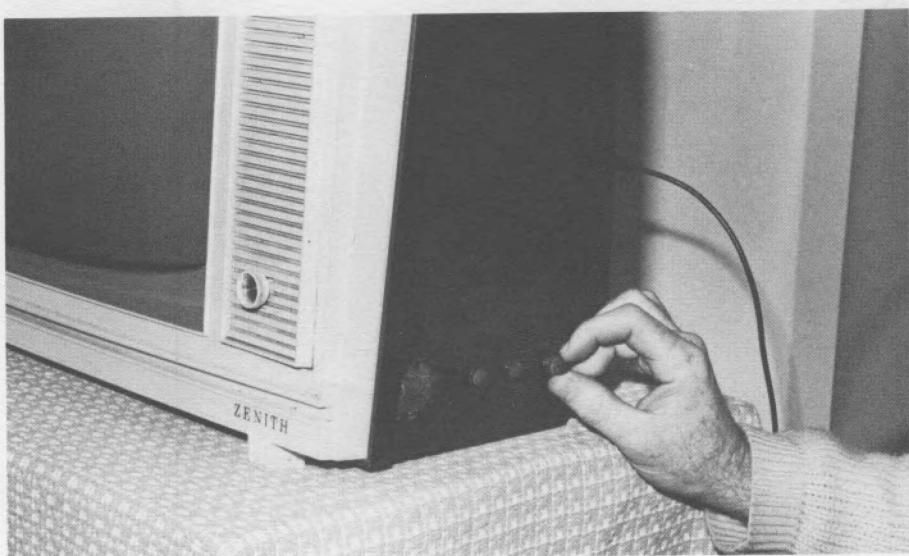
### **Rolling Images**

If the game picture rolls, creates multiple images or jitters, it's usually cured by readjusting the TV's vertical-hold control.



**Fig. 6-9A.** Rolling image is corrected by ...

**Fig. 6-9B.** ... adjusting the vertical hold control.

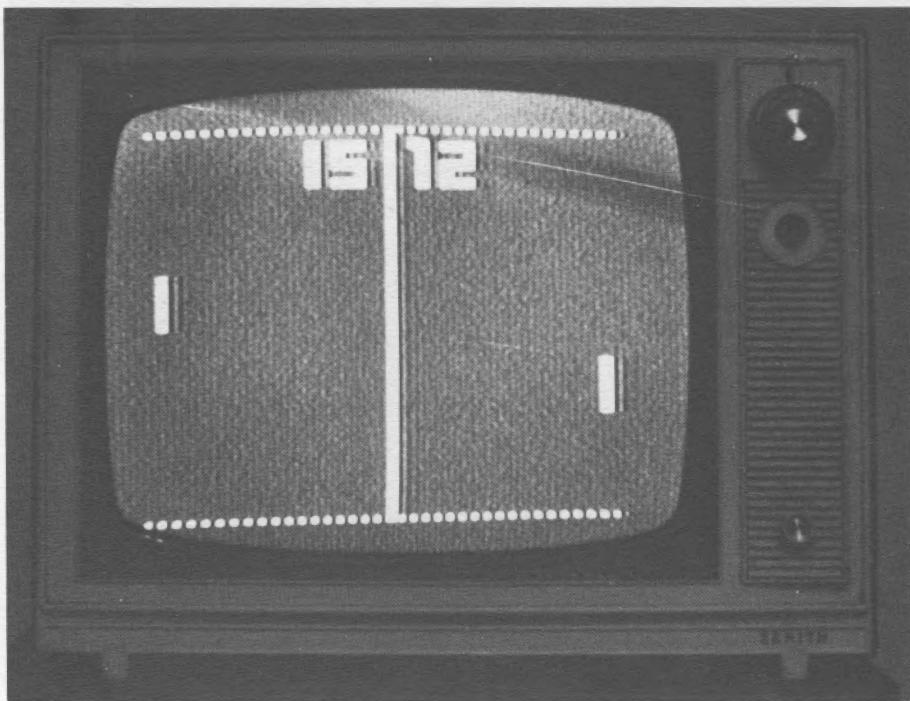


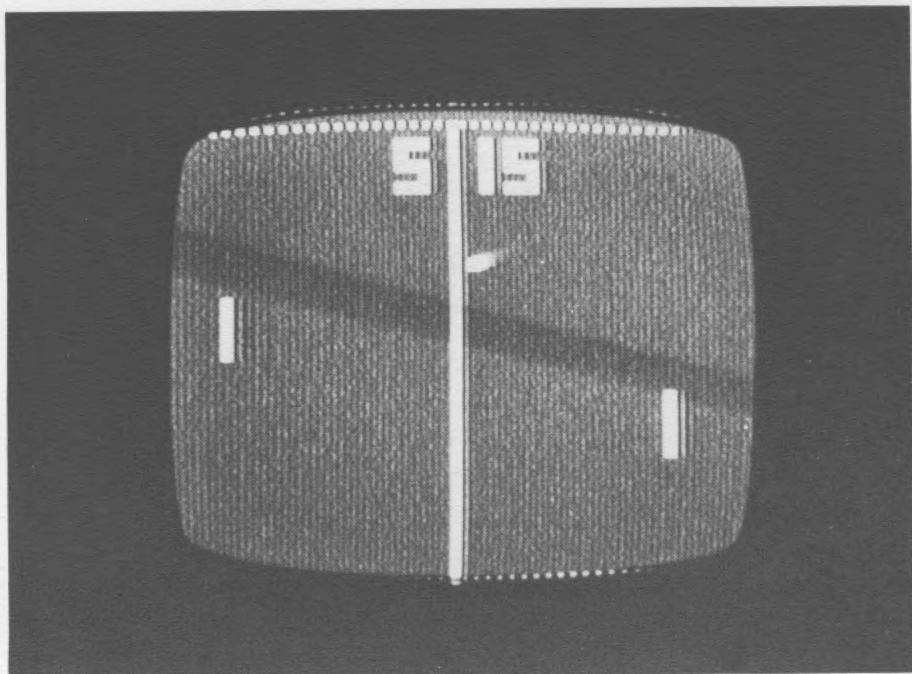
### **Top or Bottom Cut Off**

The edges of a playing field or court at the top or bottom of the TV screen must be clearly visible. Otherwise, a ball or puck disappears off the screen before it rebounds, and makes the game difficult to play. If the game is not properly centered from top to bottom, the reason could be in the TV set. But before you adjust the TV, check the game. If the game boundaries fit correctly on another TV set, your first set probably needs adjustment, as described below.

Adjusting the top and bottom of the TV screen can be done by a TV serviceman or, if the controls are easily accessible, by a handy set-owner. The controls, usually marked "vertical size" and "vertical linearity," are located at the rear of the TV cabinet. As you turn the controls with a small screwdriver, observe the image on the screen. (A mirror in front of the screen is helpful. It lets you watch the reflected TV image while you stand in

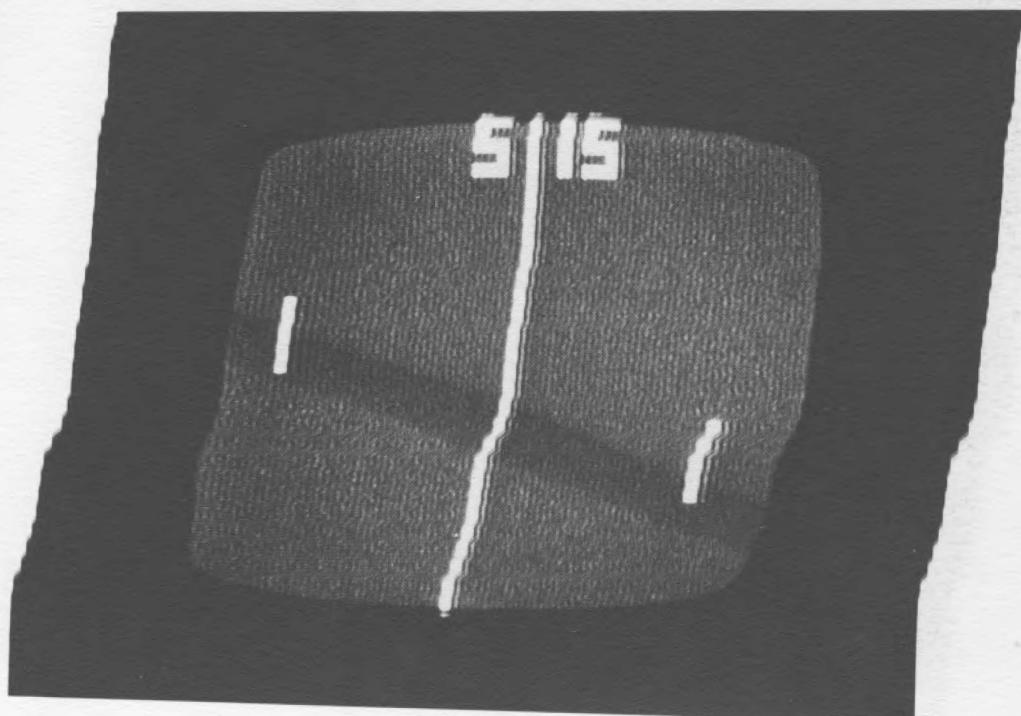
**Fig. 6-10.** Top and bottom boundaries (dotted lines) must be visible, as shown above.

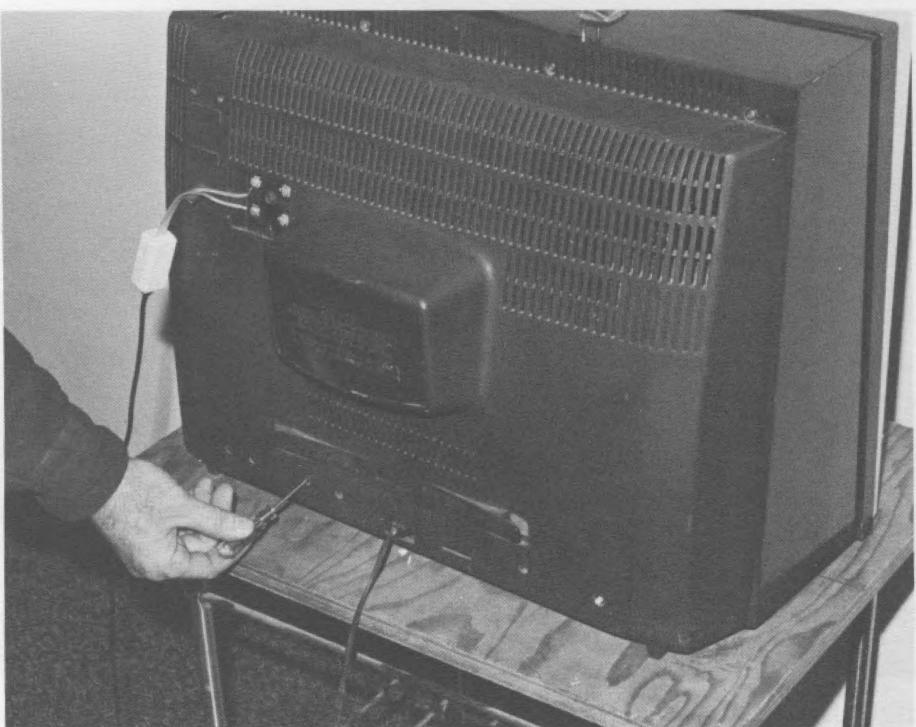




**Fig. 6-11.** Bottom boundary of game is cut off.

**Fig. 6-12.** Top and bottom boundaries cut off.





**Fig. 6-13.** Vertical adjustments at rear of TV set.

back of the set.) Adjust the controls to bring the game outlines back onto the screen. Turn slowly—too much rotation may cause the picture to elongate and be difficult to restore to correct proportions. (People on TV programs will appear to have tiny heads and long bodies.) You may avoid the problem by making a tiny adjustment and watching the result on the screen. Only a minor “touch-up” of the vertical controls should bring the game into the field of view.

Generally speaking, the vertical linearity control on a TV set affects the top half of the screen, while the vertical size control influences the lower half. A few tweaks on these controls should correct the worst cases.

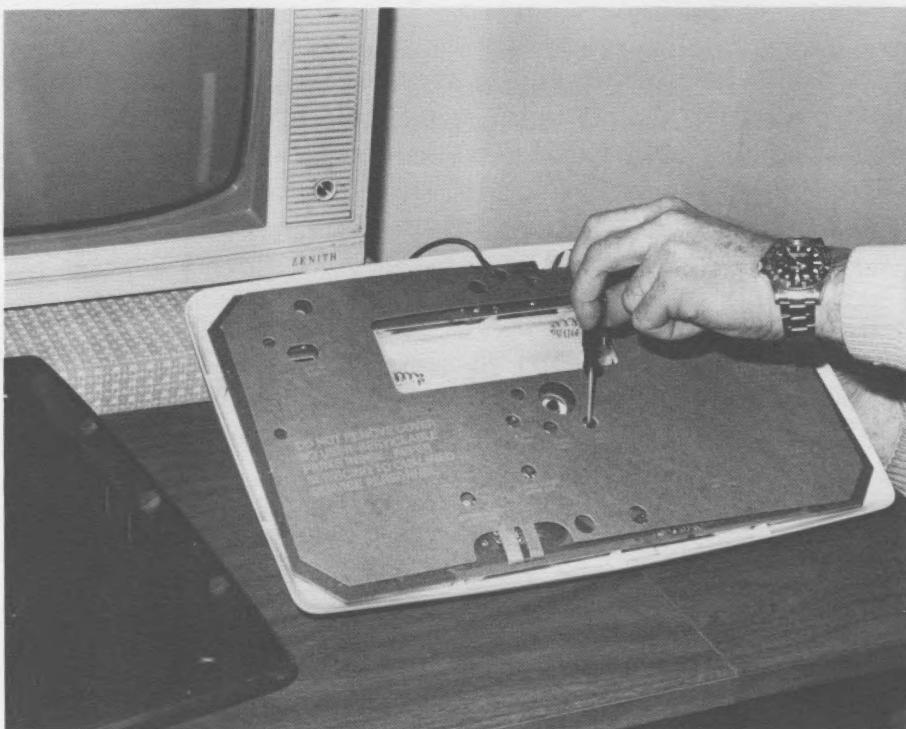
At least one game (Magnavox Odyssey) has controls that center the game on the screen, adjust the playing field and correct tearing or rolling of the game image. The instruction booklet shows how to make these adjustments.

### Sides Cut Off

In this trouble, the left, right or both sides of the playing field are hidden from view. Determine if the game is at fault by hooking it to another TV set. If the whole field comes into view, your first set probably needs adjustment. The cause is usually "overscan"; the manufacturer has adjusted the TV picture to extend too far beyond the sides of the screen. A small amount of overscan is desirable because it prevents black areas from appearing on the screen when your house current drops below normal voltage. Such drops usually happen in summer when power companies cut back voltage because of heavy demand from air conditioners.

The first step in bringing the sides of the game back into the picture is adjusting the horizontal-hold control. Although the control locks the picture and prevents slanting lines, small adjustments could bring a missing game boundary back into view. If this doesn't work, locate the horizontal width or size control (usually on the

**Fig. 6-14.** Adjusting picture controls on bottom of Odyssey game.



back of the set). Make small adjustments while watching the game and bring the lines back into view.

#### **Bars or Pictures Behind Image**

This is usually the sign of a TV program attempting to break through the game image. If you are playing through Channel 3, there could be a strong local station causing interference on that channel. This is often cured by switching the game to Channel 4, done by moving a switch at the bottom of the game. Check the manufacturer's instructions for the details.

# 7

## Secrets of the Video Champs

### Ingenious Engineers

I saw my first video hustler at a cocktail party thrown for the press by an electronics manufacturer. The player was there to demonstrate the latest in videogames. As he paddled the ball about the screen without missing a shot, a bleary-eyed audience of reporters, editors and writers wasn't impressed. But the group grew quiet as he set up the game for two players—then played against himself—twiddling the knobs in a remarkable display of coordination. For an encore, he wowed the spectators by playing the game while barely looking at the TV screen: most of the time he faced the audience and touted the game's features.

After the demo, I asked him if that's all he does for a living. He reminded me of a Hawaiian yo-yo champ whose only job was touring the world to promote the products of a yo-yo company. That was hardly true for this man's video vaudeville act. He was, it turned out, an electronics engineer who designed the game. "While the rest of the world works," he explained, "I play with these things in the laboratory." In three years he became a video champ of formidable skill.

The moral is clear: to win at videogames, one must do three things: practice, practice, practice. The ball-and-paddle games demand good hand-eye coordination, a skill that improves with experience. That was confirmed to me one afternoon when I bought a videogame in a local retail store. The clerk (another pro at the paddles) revealed that he had almost no vision in one eye. His doctor advised that his remaining vision and dexterity would improve by playing videogames.

## **Electronic Quirks**

Relentless practice isn't the only secret of the video elite. Take the experience of Len Cope, a gamesman of legendary reputation. Cope is an engineer who worked on the development of videogames during the early 1970s. Because of his playing skill, he's the leading demonstrator of his company's products to prospective customers. In the words of Ralph Baer, the man considered to be the founding father of videogames, Cope's tactics are "bloodthirsty." Both men work for Sanders Associates, an engineering outfit that holds the early patents on videogames and now licenses the rights to manufacturers. What's behind Cope's strategy?

First, learn the idiosyncracies of the game. After careful study of ball, paddle and targets, you'll note that motion is neither as random nor consistent as it first appears. A pattern will emerge. For example, watch a ball move across the screen. To the casual eye it glides at constant speed, but to a critical observer it speeds up or slows down somewhere on the screen. And different screen areas produce different rates. Once you detect these uneven movements, commit them to memory. You'll use them later.

Another item that won't escape the expert's eye is where the serve comes from—center, left, right, paddle or elsewhere. You must carefully anticipate the ball's arrival to plan your maneuvers. If the game is programmed for an automatic speed-up, know exactly how many volleys it takes to happen. This kind of detailed knowledge cuts down on surprises—and the fewer surprises a player encounters in a videogame, the more successful he will be. It's comparable to learning baseball. In the beginning, each action on the field is a surprise. But after enough experience, a good outfielder, for example, breaks for a fly ball almost at the crack of the bat. He moves quickly because he's memorized the game's subtlest patterns. Many of these variations demand close attention, but once they're learned they make you a baseball—or video—champ.

In many popular videogames, for example, the ball is more difficult to control when it moves near the bottom of the screen. The ball responds so quickly in that area that rapid adjustments are difficult to make. That's not a

problem near the top of the screen because the slower movements there are easier to control. The champ not only recognizes, but exploits, such a quirk. He'll aim shots toward the bottom of the screen to put his opponent at a disadvantage.

Gremlins like that one result from compromises a designer makes when he contrives a videogame. If every element moved with precision, the circuit would grow too complex and expensive to produce. It could create a dull game, too. Len Cope says, "I always look for compromises made by the designer. When I see them, I plan my strategy to move with these characteristics, instead of against them. They can give me a slight edge."

### **Control Sensitivity**

Another winning technique is maneuvering a paddle with precision. To a casual player, there appears a direct relationship between the control and the paddle movement on the screen; move the lever and the paddle responds exactly in step. But a critical player notices that it's more like power steering in an automobile. The connection is indirect. As you work the controls, you'll notice an effect called "non-linearity"—the paddle doesn't respond equally over the full control range. The paddle, instead, moves at a different speed at different settings. You may also discover speed differences between players on the same team, another factor noticed by an expert and turned to his advantage.

### **Player Variations**

In a videogame all players are not created equal. One might be better at firing in an upward direction, while another more easily fires down. A third may be a miserable shot. In some instances, a player is better at running up than down, so a champ would keep such a player low on the screen to make him do what he does best: rise to the occasion. So judge your players' talents like the coach with a singular interest: winning.

"When I approach a game for the first time," concludes Len Cope, "I attack it like chess. I examine each player to determine its capabilities, then study the field to discover which players operate best in certain modes. Then I develop strategy to take advantage of it. Sometimes you have to blunder along—even make mis-

takes—but I always develop a learning pattern and use it to improve my game.”

One pitfall though. Gaining prowess at one video-game doesn’t guarantee you’ll be a champ at another. Each game has its peculiarities. Even a winner like Len Cope has embarrassing experiences at the hands of an unfamiliar game.

### **Psych Out**

Tennis players earn formidable reputations by screaming at umpires. And it’s not rare for a squash player to stare off-court—then catch his opponent with a lightning serve. The canny video player, too, has a bag of psychological tricks. In two-paddle hockey or doubles tennis, for example, you can unnerve any opponent by moving your paddles after you’ve hit the puck or ball. There’s an excellent chance it will divert his attention, allowing the ball to wing past before he knows it.

### **Nervous Service**

If your game has manual serve, try this ploy. Agree in advance with your partner that the winner of a point will deliver the next serve. When you are the server determine when your opponent is not ready—then fire away. Mix your serves, too—some fast, some slow—to keep your opponent edgy and guessing.

### **Dirty Trick**

No one likes a cheater, especially in a friendly videogame. But if you can’t win by skill and intelligence, try this: an instant after pressing the serve button, flick the ball-angle switch. Your unwary opponent could miss by a mile.

### **Repeating Gambit**

Say you’ve invited a neighbor for a couple of turns at your new videogame. Poor chap doesn’t know that you have intimate knowledge of the game’s repeating patterns. As described in an earlier chapter, the ball seemingly bounces at random but, in fact, follows a predictable pattern during certain plays. Because you know the ball’s pathways, you can leisurely station your player and score a point.

# 8

## Shoot-em-ups and Road-Racers

"Sick sick sick."

"Insidious."

"Morbid."

Those were the words of a shocked National Safety Council in 1976 when a new coin-operated game appeared in amusement arcades and cocktail lounges. Called *Death Race*, it became the hottest entry in a field of fierce competition and quick turnover. For twenty-





Fig. 8-2. Coin-op gun fighters.

five cents, a player would grip a steering wheel, jam down an accelerator and peer over an automobile hood. Ahead on a TV screen he would see humanoid figures called "gremlins" darting across the road. The object of the game—heh, heh, heh—was to run down the gremlin. When a hit was scored, a tombstone appeared in the roadway.

The game wasn't one-sided. As tombstones littered the road, the driver found it increasingly difficult to elude them. Each time his car struck a tombstone, the driver heard a resounding crash and had to begin again. Although newspapers and TV decried the macabre character of *Death Race*, the manufacturer didn't mind the publicity. All he got, in his words, were: "More orders!"

Whether such games can trigger violent behavior is still a raging controversy—but one trend is clear. When law-abidin' folk gather around videogames, guess which models attract the most interest? Not sports that turn average people into tennis stars or hockey heroes—but into fighter pilots and tank commanders.

Drawing on the experience of the coin-op outfits, the makers of home videogames discovered the irresistible lure of the screeching wheel and stuttering gun. To satisfy that urge, they marketed a second-generation product often known as the "action" game. Instead of focusing on sports, these games concentrate on moving targets,

swooping sputniks, vicious fish and martial vehicles. With plenty of pyrotechnics and ominous noises—critics notwithstanding—they are downright exciting to play.

### **Target Games**

Your living room becomes an instant shooting gallery with target games. There's no worry, though, about shattering your Louis XIV antique vase. Because it's all done with light, there are no bullets. A marksman aims a gun at a white spot moving across the TV screen. If gun and target are perfectly aligned, light from the screen enters the gun barrel and strikes an electric eye. That triggers a tiny flow of electricity along a wire from gun to game console, and a point is scored. There's nary a danger to TV set or people.

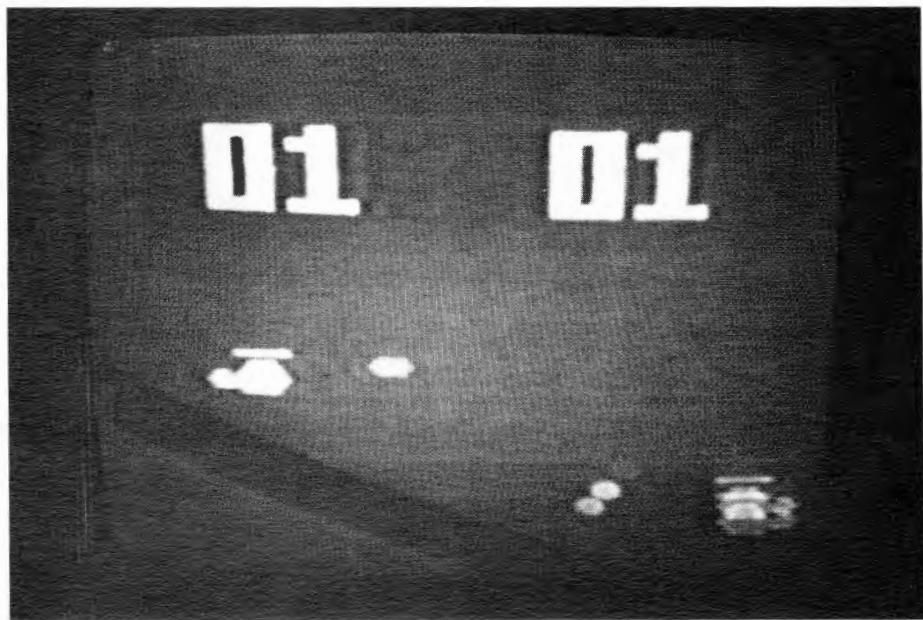
Take the game of skeet shooting. As a target moves across the field, a pair of digits appears on the screen; one registers the number of shots fired, the other tallies the number of hits. There are usually 15 shots per game, so a perfect score is 15-15. If the game has a speed control, you can increase the skill level by moving the target faster over the screen.

Another version has a rebounding target: the target doesn't move in one direction but bounces about the screen. You'll take potshots to score hits, but the target movement is more complex. You can increase the skill level by raising the target speed or choosing a sharper rebound angle. Another way to make the game more difficult is to move further from the screen. You can usually fire the gun up to 15 feet. If the rifle has a detachable barrel, removing the extension shortens it to a pistol, which demands greater aiming accuracy.

The earliest crop of target games was not reliable. Because the gun senses a feeble glimmer (the spot on the TV screen), there's risk of interference from room illumination or sunlight. It takes some experimentation to discover the amount of room light that causes the gun to fire and score.

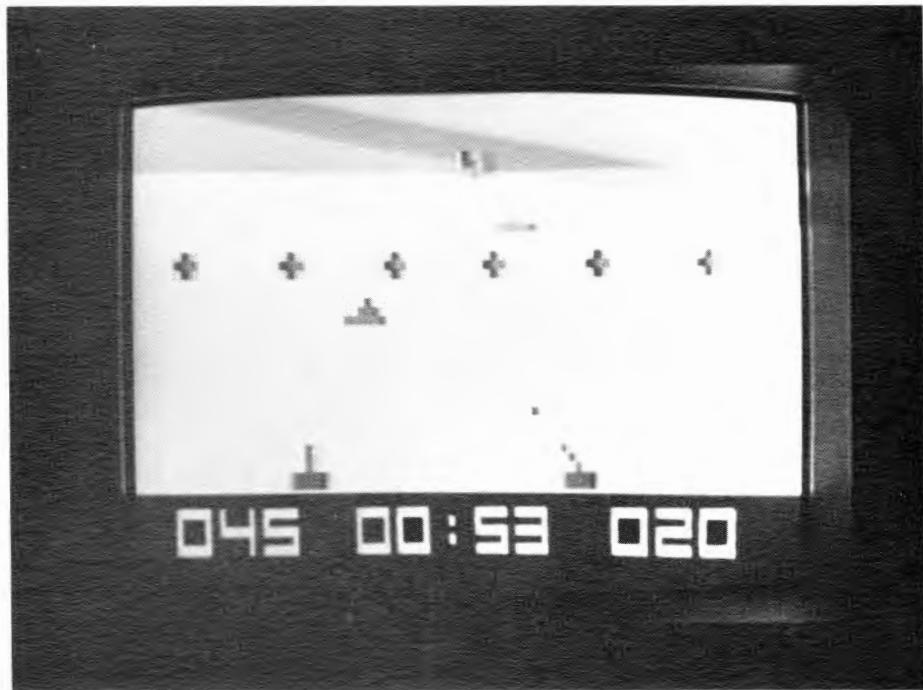
### **Battleground**

Another breed of shooting game moves the action onto the screen. Instead of holding a rifle, the player



**Fig. 8-3.** Battling helicopters.

**Fig. 8-4.** Submarine action game.

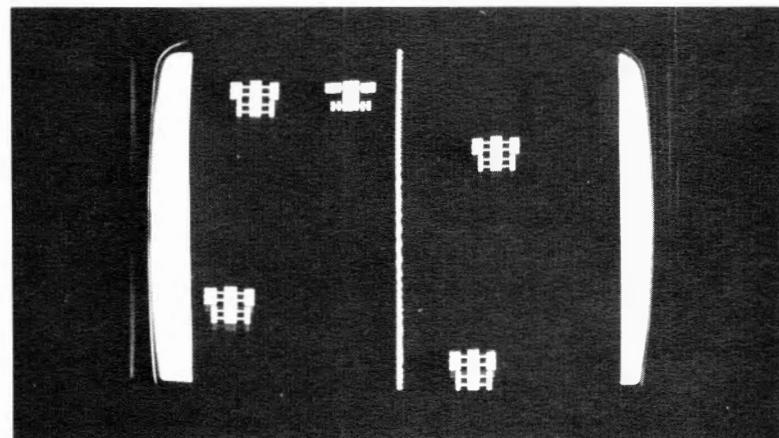


manipulates console controls to direct a tank, helicopter or some other symbol against a fleeting enemy. Scoring depends on the sophistication of the circuit. In one game that creates a space war, twenty missiles are released against fleets of large and small aggressors flying over your launchpad. If you shoot down a small one, you're awarded more points than for a large vehicle. A game with a built-in timer compels a player to score hits within a fixed interval.

One battleground game that fulminates with action is *Desert Fox*. Found in one of the programmable models (described in detail in the next chapter), two contenders maneuver their tanks around a battlefield. A canny driver can seek protection behind an obstacle, while a wrong turn leads to explosive destruction in a mine field. Out in the open, the armchair tank commanders pepper each other with shots and see their hits explode in a burst of red smoke. The supply of ammunition is unlimited, but the game ends after a preset time span. Another example, shown in figure 8-4, is a submarine action game.

### Road Racing

Simple road-racing games hold a player's interest, but they cannot re-create actual vehicles skidding around a track. That takes costly circuitry not found in inexpensive home models. But there's still ample excitement. In the model shown in figure 8-5, for example,



**Fig. 8-5.** Cars travel from top to bottom of screen.

there is one stretch of track on the screen (there are no curves). When the game begins, cars continuously stream down the track—from top to bottom of the TV screen. They flow over lanes in almost unpredictable patterns. As you drive, your car faces the oncoming traffic and remains fixed on the screen. You can, however, swerve left and right to accomplish the game's objective: avoiding collisions. When you fail, your vehicle is consumed in the smoke and crashing sounds of a collision. The action on the screen momentarily halts and a point appears on the scoreboard. After nine points (or accidents) the race is over.

To keep the race exciting the game is programmed to move the cars at a slow pace at first, then accelerate them to dizzying speeds. The fastest rate would cool the heels of the hottest rodder.

# 9

## Games with Brains

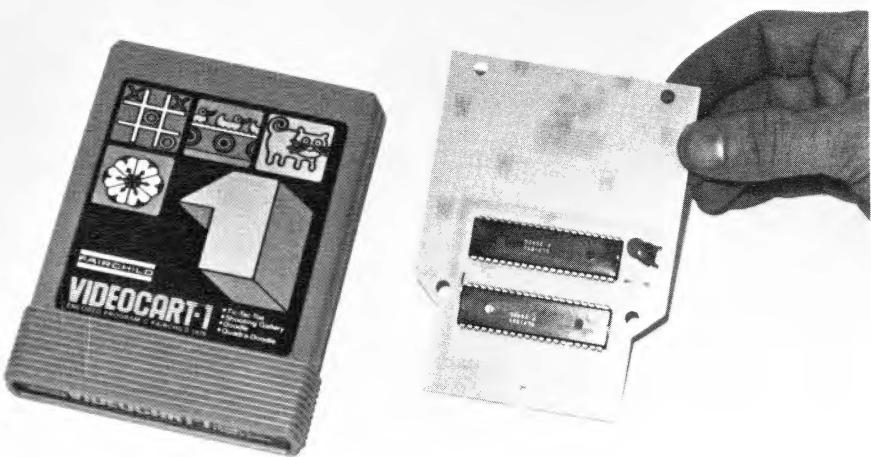
Ball-and-paddle games and the “action” models are marvels of electronic wizardry, but they are only the beginning. If estimates are correct, simple games will drop to less than half the market. These models are the mom and pop of a third-generation offspring called the programmable games—truly the games with brains.

The earliest games were manufactured with rigid instructions for limited types of play. That makes them cheap to produce, but it also creates their greatest single shortcoming—loss of player interest. After a couple of weeks your enthusiasm sags, and the game is played only on occasion or pulled out to demonstrate to friends.

Programmable games, on the other hand, are far more versatile. Instead of a “dedicated” electronic chip, they contain a “microprocessor,” a mountain of transistors compressed to thimble size—and constructed with a remarkable provision. You can slide a cartridge into the game and refresh it with a new set of instructions. With a continuing supply of cartridges, the programmable model vastly multiplies the number of games. It’s like owning a phonograph, then selecting records to suit your taste and interest.

### Channel F

The first programmable game to reach the consumer market was the Fairchild Video Entertainment System in a model called *Channel F* (for the company name). At first glance the basic console is not unusual: it has an array of buttons for choosing a game, degrees of skill and a time limit. By pressing the right keys, you can choose the two “resident” games—built into the basic console—of tennis and hockey.

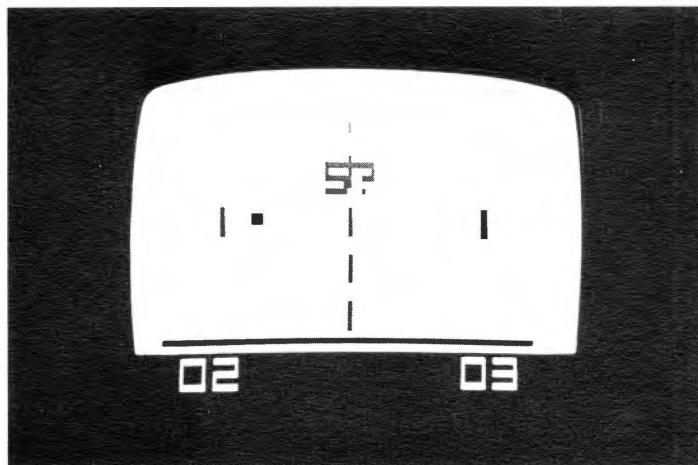
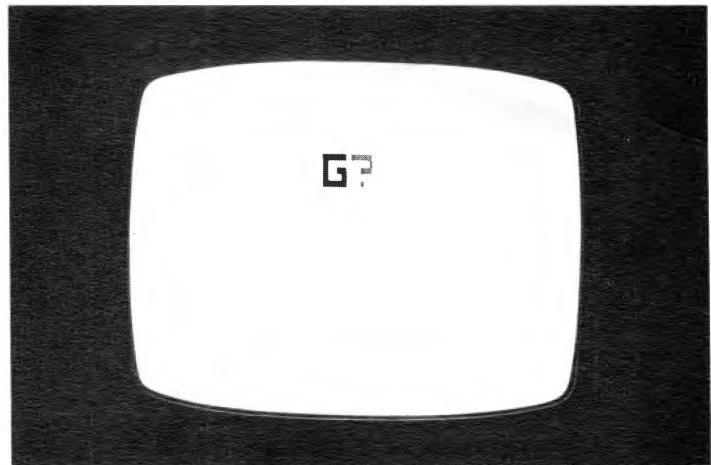


**Fig. 9-1.** Inside cartridge. Instructions for two games are encoded in electronic memories located in two horizontal blocks below thumb.

**Fig. 9-2.** Cartridge slides into programmable game.

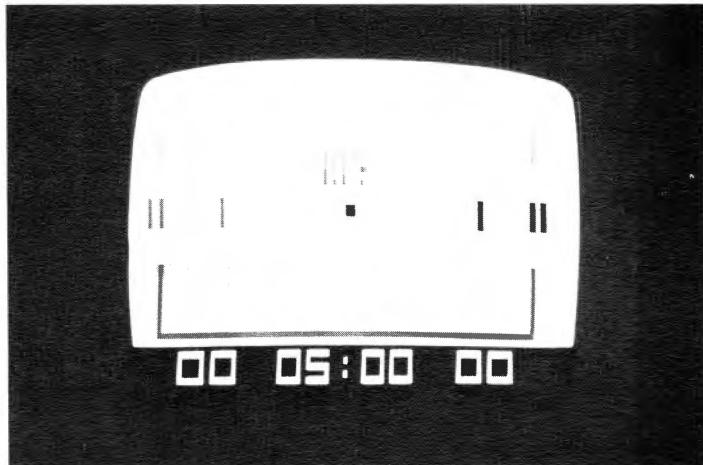


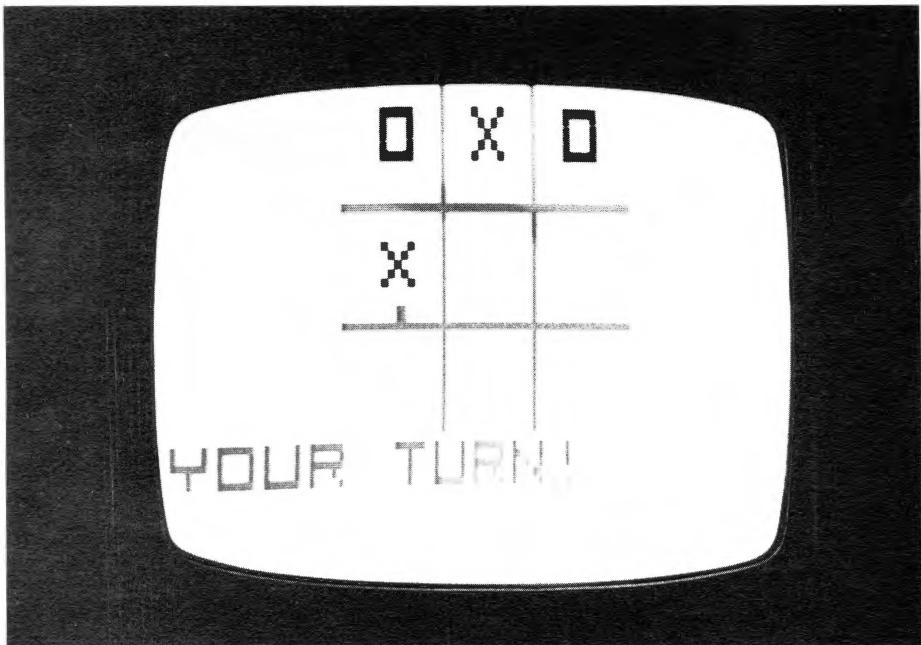
**Fig. 9-3A.** After cartridge is inserted into programmable game, electronic brain asks which game you wish to play



**Fig. 9-3B.** Player pressed tennis button, so court and players appear. Brain next inquires if you're ready to start: "S?"

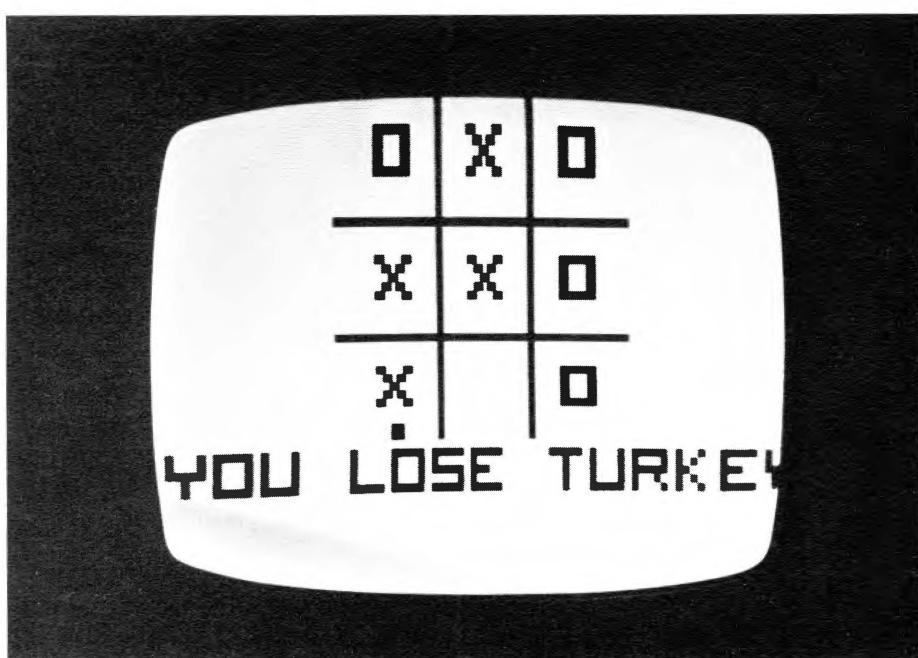
**Fig. 9-3C.** Before game begins, brain asks "M?" meaning mode, or speed. This determines skill level.





**Fig. 9-4A.** Tic-Tac-Toe. Electronic player is “O”; human player is “X.” Note message at bottom of screen, delivered by impatient brain.

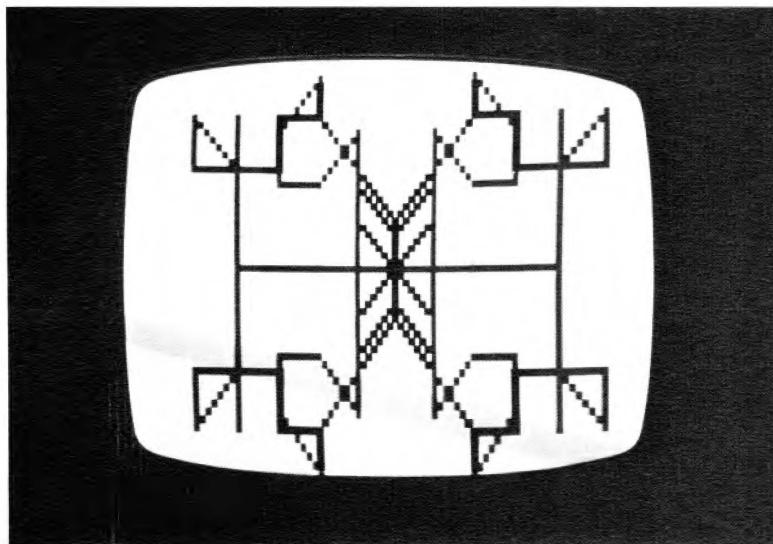
**Fig. 9-4B.** Although brain is beatable, it gets sassy when humans lose.



But soon the similarity ends. Slide a cartridge through a slot on the console, and the circuit is instantly programmed for four more games. One is the classic Tic-Tac-Toe; no ordinary challenge because your opponent isn't flesh and blood but microprocessor and semiconductor memory. As you stroke in X's, the brain responds with an appropriate O, and play continues until either contender wins.

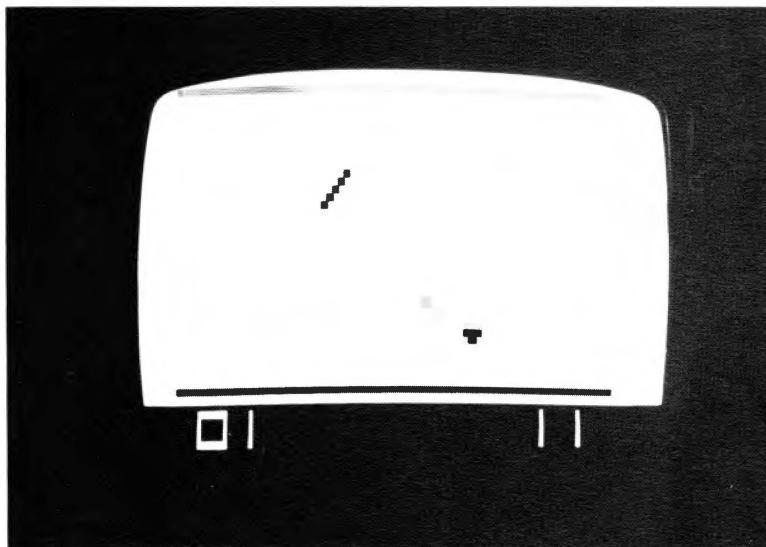
**Fig. 9-5.** Button selects one of up to four games on cartridge.





**Fig. 9-6.** Doodling on TV screen.

Other games on the same cartridge include a shooting gallery and two doodling games. By manipulating the controls in one doodle game the TV becomes a canvas where you can create your own designs in color. You can change the path and thickness of a line on the screen or select a color. The other doodling game is self-completing: press a button and the game traces colorful lines that grow increasingly complex, until the whole screen is criss-crossed with intricate patterns.

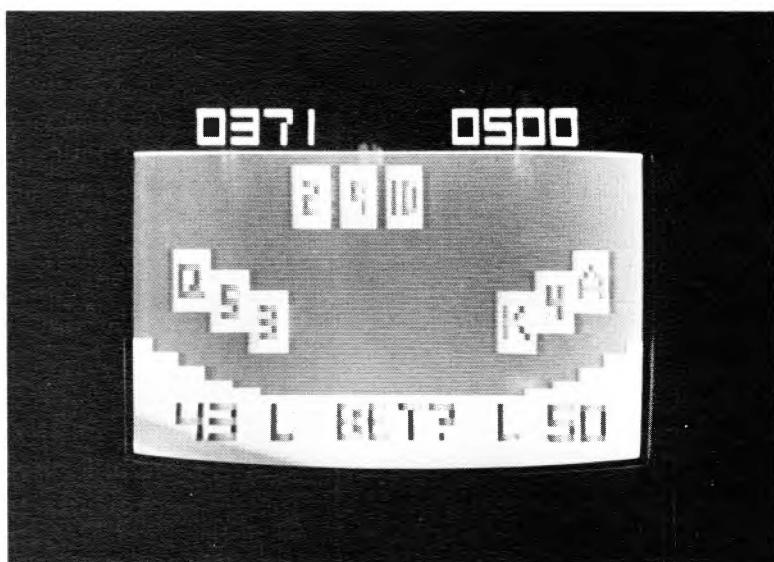


**Fig. 9-7.** Shooting gallery. Player is at upper left, as target descends on screen (lower right). Bullet (visible as two squares near target) is released by player. Before each run of target, player is repositioned by game's brain.

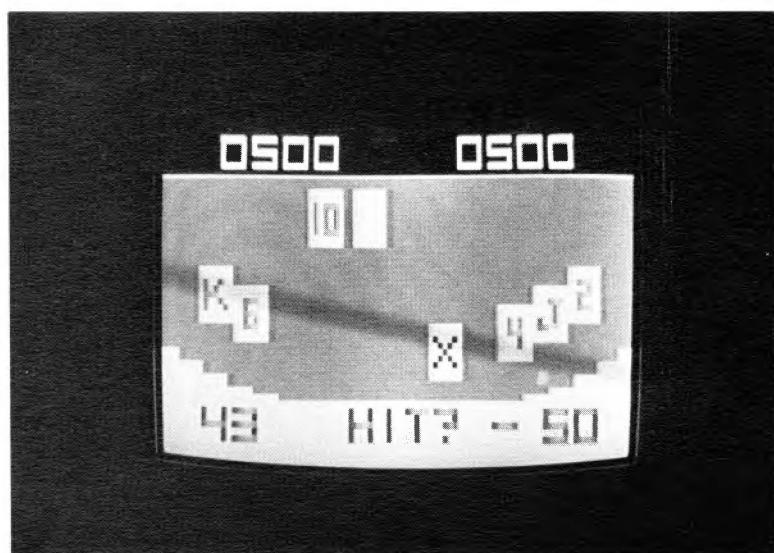
### Video Vegas

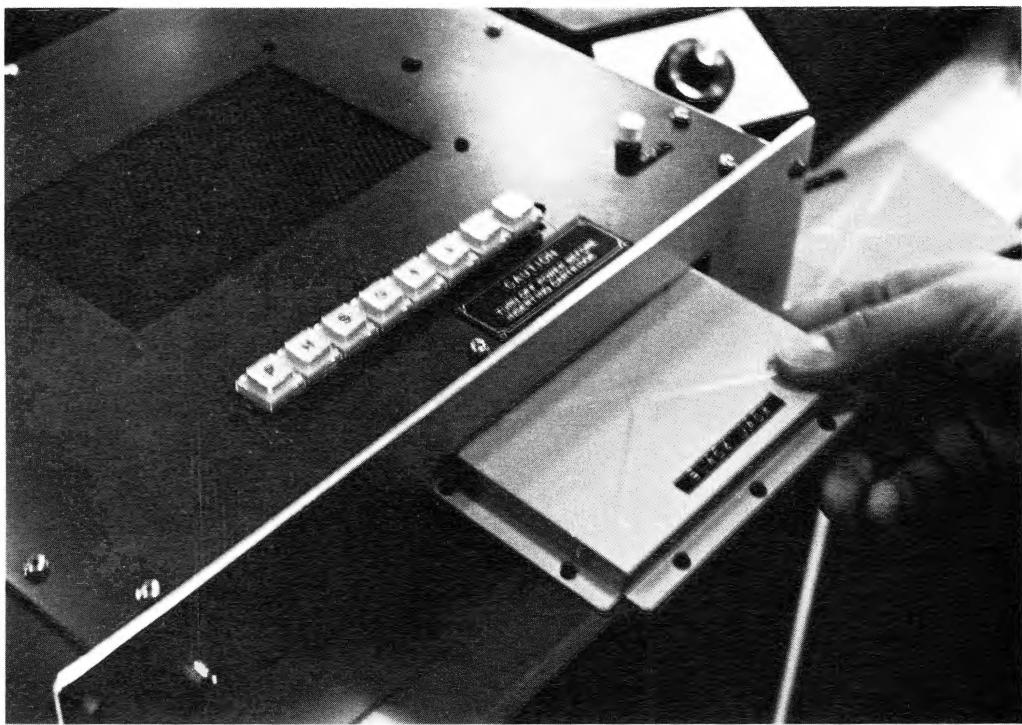
When you're tired of those games, you can obtain additional plug-in cartridges. There are tank battles, skeet-shooting and a video version of Black Jack. In the card game, two people play against an electronic dealer and begin by wagering a sum of money indicated on the screen. When betting is complete, cards are dealt to you, the other player and the dealer. Upon your command

**Fig. 9-8A.** Black Jack.  
Dealer is at top, human  
players are at left and  
right. Note, at bottom  
center, dealer is asking for  
bet.



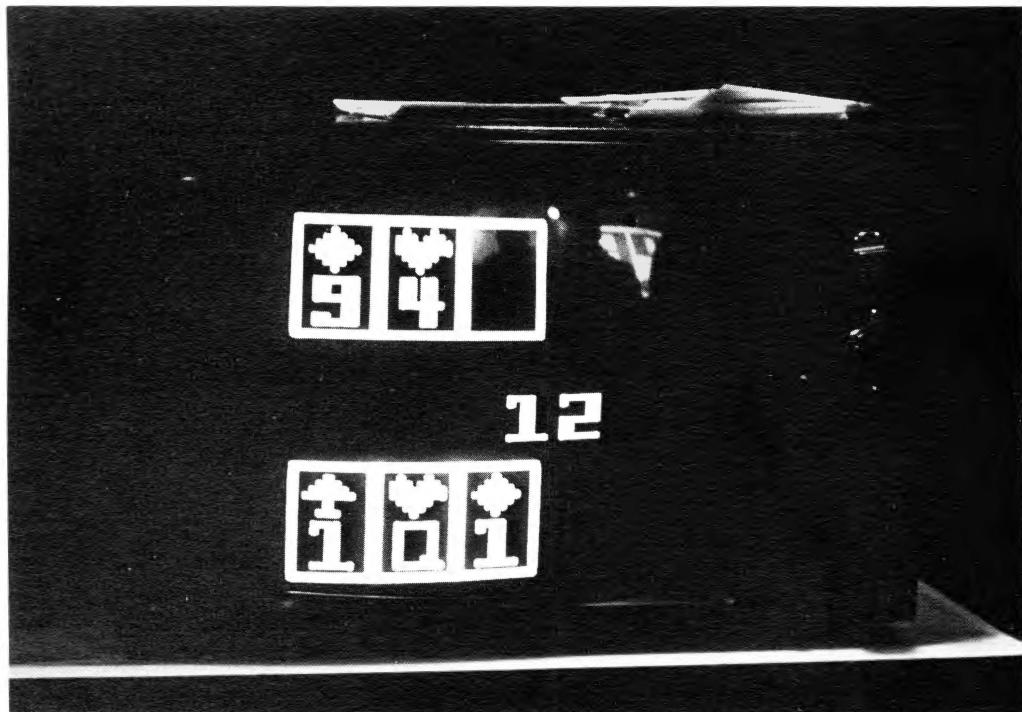
**Fig. 9-8B.** Dealer (top) is  
asking human player at  
right if he wants another  
card (see "HIT?" at  
bottom).





**Fig. 9-9A.** Lab model of advanced videogame. Cartridge contains Black Jack.

**Fig. 9-9B.** How playing cards appear on screen. Note how, in addition to numerals, suits appear (diamond, heart, spade, etc.) on cards.



the dealer "hits" you with additional cards (each appearing on the screen) as long as the total doesn't go over 21. After the human players "stick" (ask for no more cards), the dealer receives his own cards. Just like Las Vegas. The dealer takes another card if he totals 15 or less—and sticks with 16 or more. At the end of each round winners are paid off (digits appear on the screen), and the next play begins as the dealer inquires, "Bets?" To avoid any hint of foul play, the dealer shuffles the deck before continuing. Another variety of the same game is shown in the illustration.

### Studio II

As RCA's entry, *Studio II* is another programmable game. Instead of conventional controls, the player presses buttons that resemble the keyboard of a pocket calculator. In one game, for example, secret numbers are scrambled on the screen and a player presses buttons in an attempt to arrange the digits in sequence. Because it's a solo game, the correct sequence must be discovered in a limited number of moves (thirty or less). It becomes a competition between two players when you compare final scores: the lower figure (meaning fewest moves) wins.

Another numbers game tests a player's power of deduction. Nine random numbers are displayed on the screen, and you must determine which of three selected numbers (chosen by an opponent or by the machine)



Fig. 9-10. RCA Studio II

are correct. For example, if the secret numbers are 269, and you try 257 on the keyboard, you'll be informed that one number is correct. Next, punch in 259 and you'll be told that two digits are correct. You'll probably take ten or more trials to discover the correct numbers, plus several moves to arrange them in the right sequence. The player with the greatest concentration does it in fewest moves.

Another numbers game gives an educational slant by administering an arithmetic test. After reading a question in a booklet, the player presses the keyboard to flash an answer on the screen. The machine checks the answer and the number of seconds the player needed to respond. These factors—time and accuracy—are combined to calculate the score.

### **Bowling**

Another Studio II game is a bowling match. The TV image consists of ten pins at one end of an alley, and a blip of light to represent the ball. Before each frame, a player operates keyboard buttons to position the ball for a strike. If all pins aren't knocked down on the first try, you'll aim and deliver a second ball. After each throw, ball and pins disappear and are replaced by the score. The screen also tells the status of a spare or strike—until ten frames are completed and a final tally appears.

### **The Home Computer**

With its dancing lights and intriguing challenge, the videogame has won a durable place near the TV set. But experts of consumer products believe it's just the tip of an electronic iceberg. As exploding electronic technology hands the game makers exotic hardware at bargain-basement prices, the games will grow in complexity. But predictions say it won't only mean bigger and better games. The outlook, rather, it toward the "home computer".

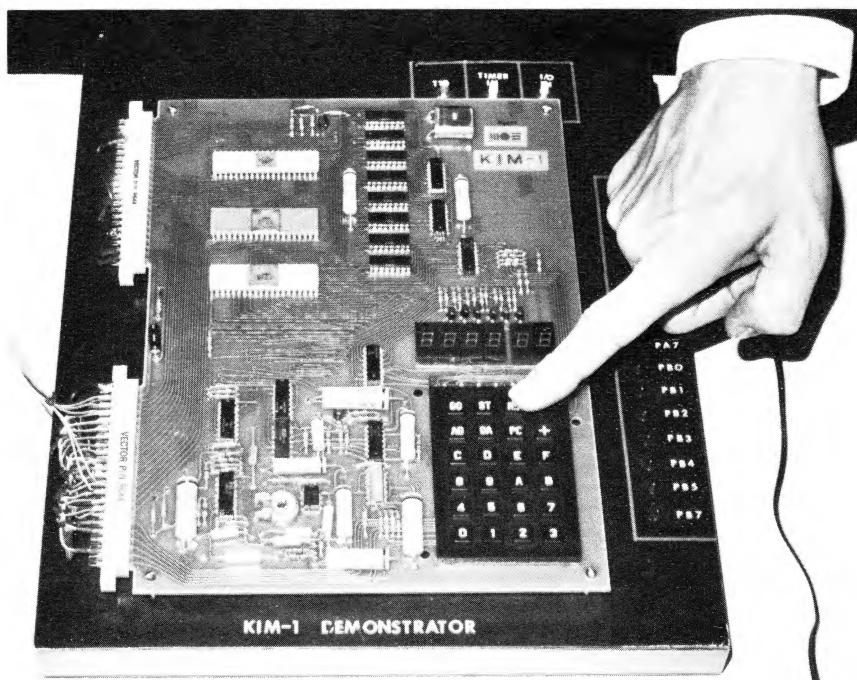
It's already arrived in limited numbers. One clue is a programmable game that now includes many basic elements and functions of a computer: memory, storage, in-

structions, addressing, processing, readout, digits and display. One manufacturer, in fact, sees the videogame as the perfect introduction to computers for millions of people who would otherwise be turned off by electronic instruments of high technology.

Not just the dream of a crystal-ball gazer, the home computer has already attracted national attention. One of the first such instruments was "Pet" by Commodore. An acronym for personal-electronic-transaction computer, it is a basic unit introduced in 1977 for under \$500. Besides playing TV games, the device can help teach a foreign language, regulate household appliances, figure the cost and number of calories in a meal, calculate income taxes, balance a checkbook and solve scientific equations. When not playing games, "Pet" can sit on a kitchen counter, ready to spew out reams of stored information.

Another interesting feature of the home computer: it can talk through a telephone. In this hookup, it will answer and record an incoming call—or dial a number and carry on a conversation with another computer tied to the phone line. It will exchange information, as is now done on a mammoth scale in business.

**Fig. 9-11.** Kim, a forerunner of the home computer, is shown with cover removed. Finger points to operating keyboard. Calculating power rivals that of a large 1950 computer.



Do you have difficulty remembering birthdays and other important occasions? It won't be a problem with your personal computer. Feed dates, phone numbers, appointments and correspondence into the computer's tape memory by typing on a keyboard. As each important occasion arises, a warning will appear on a TV screen.

That's the ultimate promise of the videogame. By 1976, hundreds of hobby computer stores were spreading over the country in response to the leaping demand by electronic buffs. As in CB, hi-fi and other special interest fields, the public's demand for these technological goodies won't lag by more than a few years.

It's a safe prediction that by 1980 these minibrainz will be a basic appliance in millions of homes. When that happens, it may not be unusual for your computer to phone my computer and say "Tennis anyone?" You and I, of course, will be out on the court, playing the real thing.

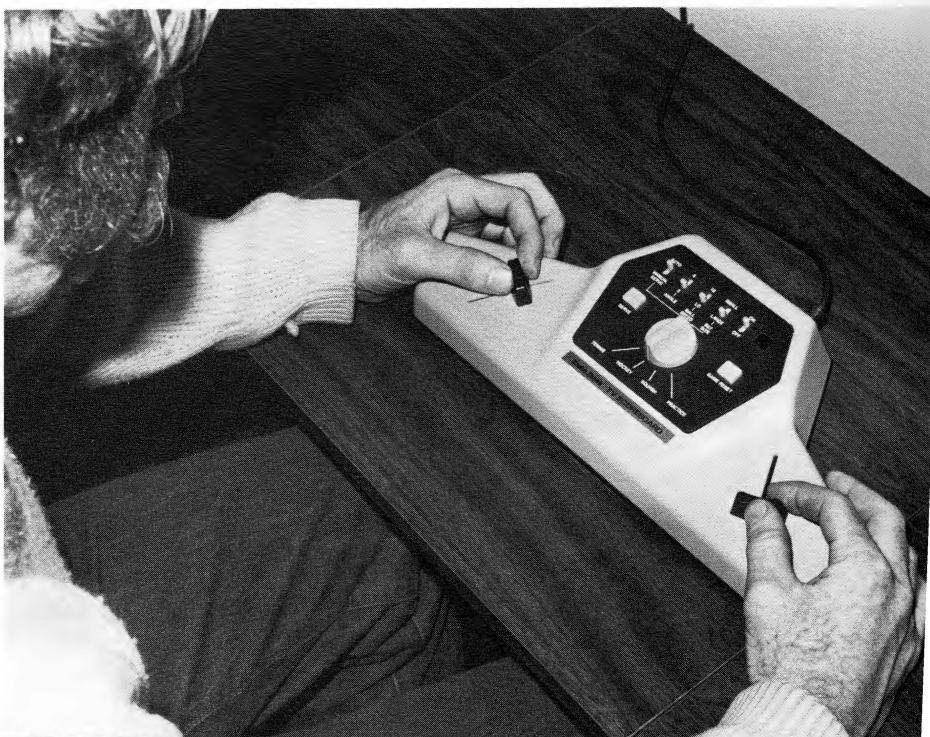
# 10

## Make Up Your Own Games

The instructions provided with your videogame may resemble anything from a leaflet to a four-color brochure. But it probably contains precious little information beyond the rudimentary rules of play. Those rules, however, are hardly the limit. With a change in operating technique, you can multiply your enjoyment with fresh challenges and intriguing handicaps. You can also invent a novel breed of game by constructing simple overlays which fit on the TV screen and create new playing fields. Let's begin with simple variations for any model, then expand to the do-it-yourself project.

### Solo Mio

This is the granddaddy of all improvised videogames. Just grab the controls so your left hand operates the left player, right hand operates the right player, and compete against yourself, as shown in the illustration. You can't lose!

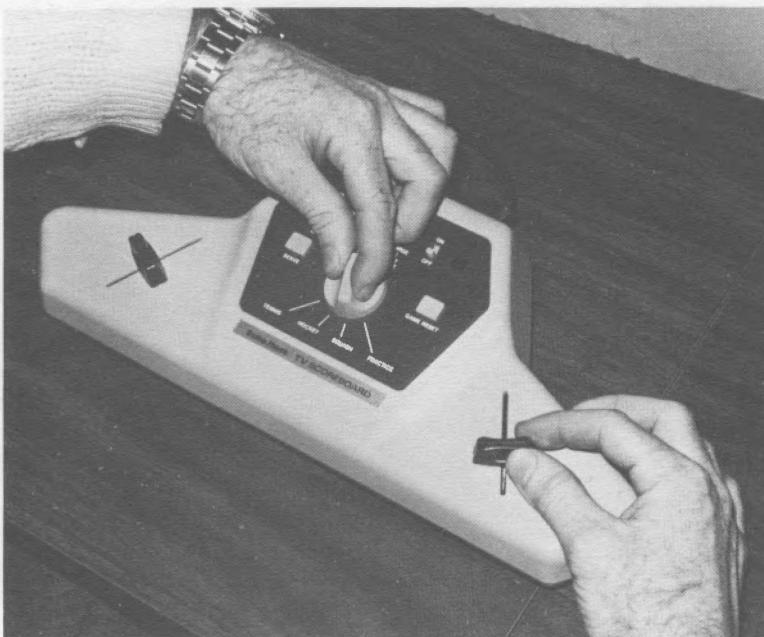


**Fig. 10-1. Solo Mio.**

### **Switch Hitter**

Here's a gimmick to pep up interest when the fun begins to flag. Examine the selector switch on your game; it probably has four or more positions, each representing one type of contest. In the course of normal play, you choose a game and play it to the end. With this variation, you can play a series of rapidly changing games. To begin, set the selector on the first game, say, tennis. Volley back and forth with your opponent until someone scores five points. That becomes the signal to switch; the person who scores the fifth point reaches for the selector and rapidly flicks it to the next position—hockey, for example. Play that contest until someone again scores five points, then shift the game selector once more. By advancing the selector every five points, you and your opponent will whiz through a quick-changing variety of games.

Try this rule to heighten the tension: After someone scores a point, there is usually a short interval before the ball is served. You must switch the game selector before the ball is served, or forfeit a point to your opponent.



**Fig. 10-2. Switch Hitter.**



**Fig. 10-3. Left-right, Right-left.**

## **Left-right, Right-left**

Only if you're right- or left-handed can you qualify for this one. Ambidextrous players are ruled out. Choose a two-player game and grasp the controls comfortably with right and left hands, then commence to play against yourself. That's not difficult, you say? Well, there's more. Notice how the solo player in the illustration is crossing his hands at the wrist—causing his left hand to hold the right control, and the right hand to hold the left control. It's a maneuver to befuddle the steadiest hand.

## Cross Purposes

To inject a topsy-turvy handicap into your game, turn the console around. In other words, rotate the cabinet until the edge which faced the players now faces the TV screen. This position introduces an odd twist in the playing action. The player on the right operates paddles for the left side of the screen, while the left player controls the right side of the screen.

### **Dominant Hand**

Ask your opponent to reach for a paddle control, as if he were about to begin a game. Notice which hand he raises. Chances are it is a *dominant hand*, the one which feels more comfortable at the controls. You do the same; reach for the control and identify the hand which gives the most natural feel.

Knowing the dominant hand intensifies competition or introduces a handicap. For example, if you're up against a highly experienced player, impose a handicap by not allowing him to use his dominant hand. If you're both of equal skill, each can use non-dominant hands to renew the competitive level while adding an interesting twist.

### **Time Factor**

Sophisticated video games, ones which can be programmed, have the electronic capacity to clock the action. Limiting time imparts a realistic touch and increases competitive pressure. If your simple ball-and-paddle model doesn't have this feature, simply use a clock or watch to perform the function. Even a low-cost digital watch has an accurate seconds and minutes display.

Besides limiting the action between two contenders, timing also benefits a solo player. When you play alone, see how long it takes to win a game. Use that time period as a bench mark to improve your future performance.

### **Penalty Box Hockey**

In this variation, you can remand a player to the penalty box—even though the game has no such feature. It's done on models where each player can control his forward and goalie positions independently. In the first version, decide who is the better player, then send that person's goalie to the "penalty box"—done simply by disallowing the use of his goalie control. The superior player is now limited to an offensive game—while the weaker contender fights with two men. If both players have equal skill, the goalie from one side is assigned to the penalty box for a certain period (say, a round of 15 points), then the same handicap is imposed on the other side for the next game.

### Dodge Ball

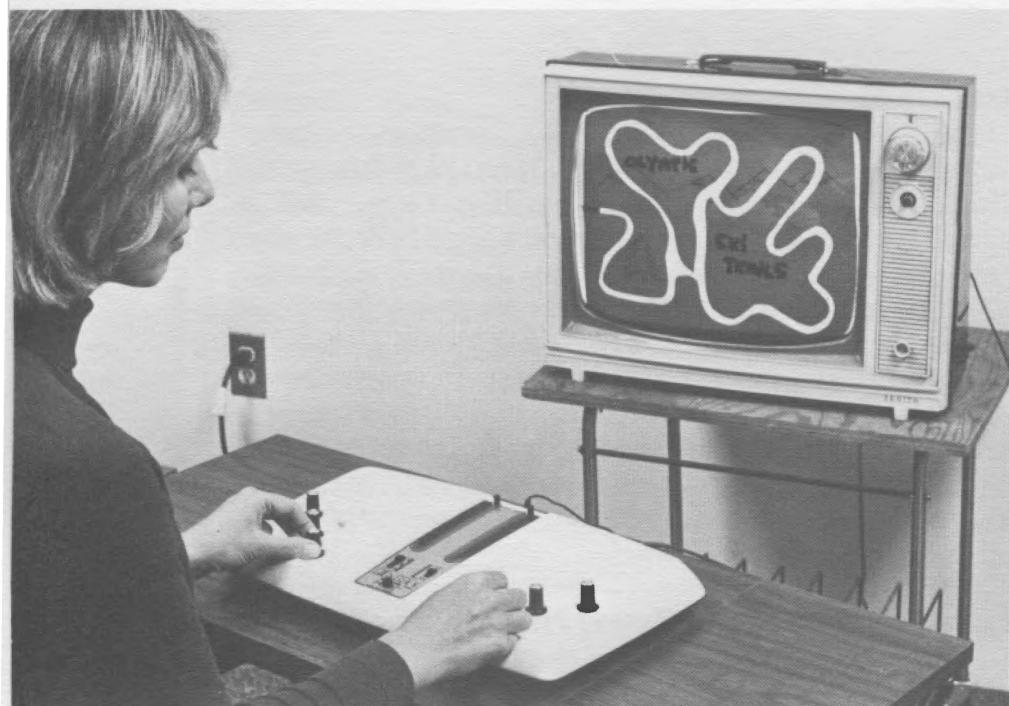
Some video games have a puck "capture" feature. When the puck strikes a player, it sticks to him until fired off by the press of a button. If you have such a game, try this exciting version of dodge ball: As the game begins, the player who holds the puck is considered the hunter. The hunter stalks his prey—the other player—and, when he sights it, fires the puck. To escape his fate, the quarry flees across the screen in an evasive movement. After a successful hit, the players switch, and the hunter becomes the hunted. To keep score, count and remember the number of shots it takes the hunter to make contact. At the end of the game, the player with the fewest shots wins.

### Constructing Your Own Playing Fields

When Magnavox introduced the first video games in 1972, the images on the TV screen were much simpler than today's variety. Several years elapsed before practical circuits were available to fill in the playing field boundaries, goals, nets and other pictorial elements which form the video game backdrop. Only the paddles or players appeared. To create a setting for each game,

**Fig. 10-4.** Screen overlays used in earliest video game, *Odyssey*. (Magnavox).





**Fig. 10-5.** An overlay for your TV screen is easily made from simple materials. It creates new types of play.

the earliest Magnavox model (Odyssey) included a set of overlays. Each overlay, a thin plastic film, was imprinted with backgrounds and symbols for ball-and-paddle games, and special games called Cat and Mouse, Haunted House and Roulette (see illustration N12-4). Before playing the game, the owner placed the appropriate overlay on the TV screen. Certain areas remained clear, allowing the screen image to show through. The object was to maneuver the player through the maze or track depicted on the overlay.

The overlay was discontinued as advancing technology could electronically display the field, net or boundary. It eliminated the bother of handling the overlays; today you merely flick a game selector to change the background.

Yet, the idea of an overlay is too good to drop, especially if you enjoy simple do-it-yourself projects. For little more than a dollar, you can create your own custom overlays and multiply the fun of your video game. Note that the game described here—one we call Olympic Ski Trails—can be played only with a video game which has both horizontal and vertical motion. You

must be able to move a spot of light anywhere over the screen. If you want to create your own design, just follow the basic steps described below and vary the pattern to suit your own needs.

**1. What You Will Need.** The overlay must be translucent, that is, able to pass some light when held over the TV screen. An excellent material for the purpose is acetate, widely available where art supplies are sold. Any color will do, so long as you can see clearly through it. Avoid opaque material because it will hide your player. A standard acetate sheet measures 20" x 24", which will cover just about any size TV screen. Other items you need to make an overlay are a pair of scissors, transparent adhesive tape (such as Scotch "Magic Tape") and a dark-colored marking pen.

**Fig. 10-6.** Materials include, from left to right, sheet of acetate, marking pen, scissors and transparent tape.

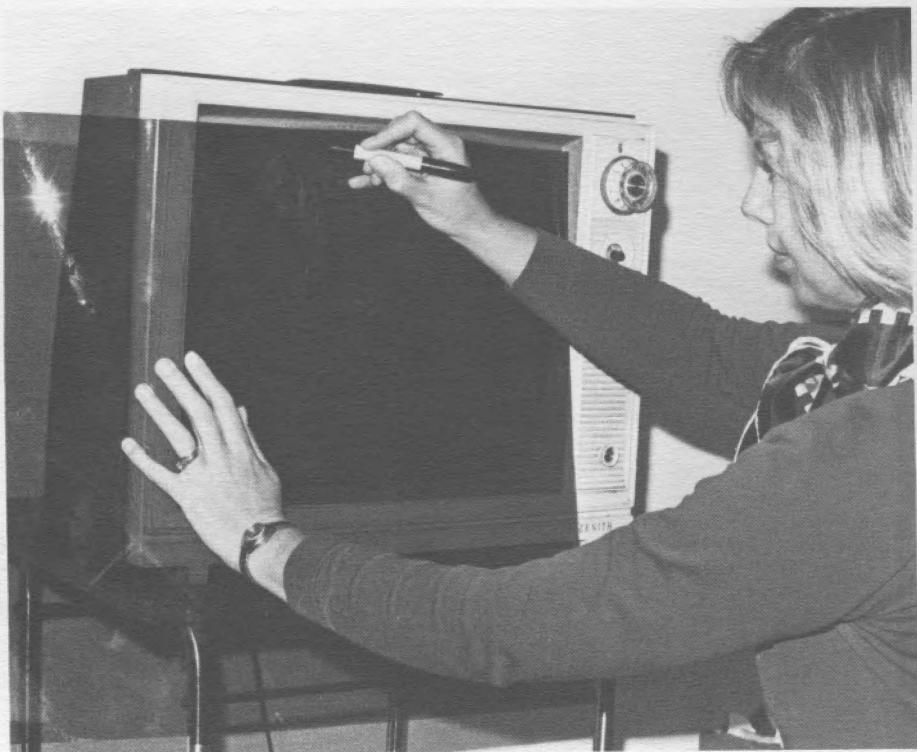


**2. Trace the Screen Outline.** Hold the sheet of acetate against the TV screen. Because a TV screen is recessed an inch or two, you cannot press the sheet tightly against the glass, so judge the next step with your eye. Trace the screen outline on the acetate with the marking pen.

**3. Cut Out the Overlay.** With your scissors, follow the outline and trim the overlay to the size of the TV screen. Another way to cut it is with a sharp-pointed razor knife (X-acto) used in model-making. Before you apply the razor, lay the sheet on a board to protect the table top.

**4. Draw the Game Pattern.** With your marking pen draw the pictorial design of the game. You can copy the pattern shown here for a skiing game, or follow your own artistic impulses. Acetate isn't costly and you can make several patterns using your own ingenuity.

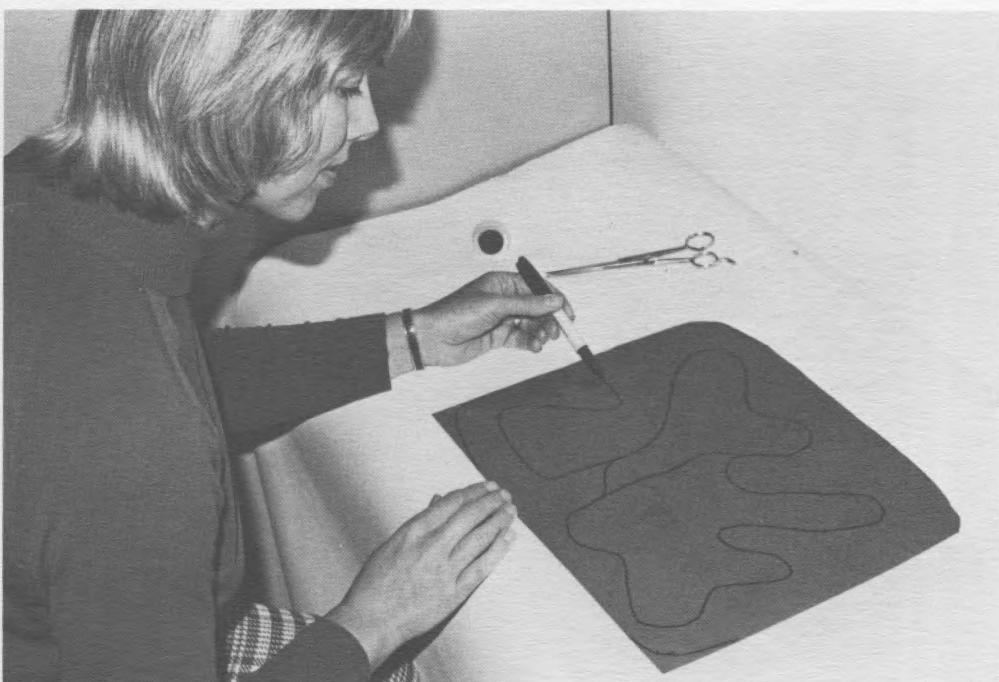
**Fig. 10-7.** Acetate sheet is held against TV screen, and outline traced with marking pen.

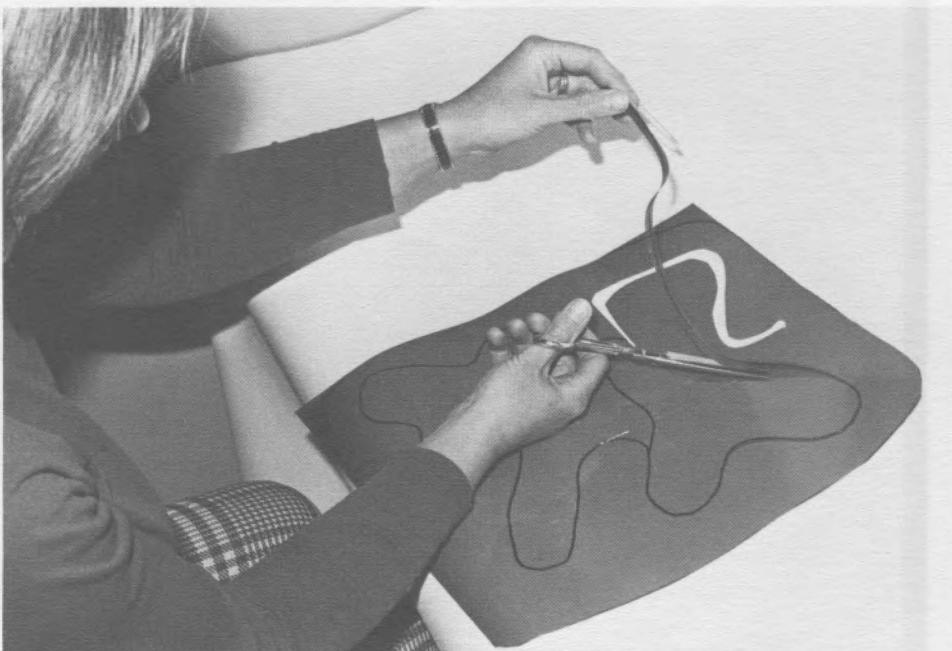




**Fig. 10-8.** Cut out the TV screen outline.

**Fig. 10-9.** With the marking pen, draw the game outline.





**Fig. 10-10.** Cut out a strip about one-half inch wide along the line.

**Fig. 10-11.** Add small lengths of tape across the track so center sections won't fall out of pattern.

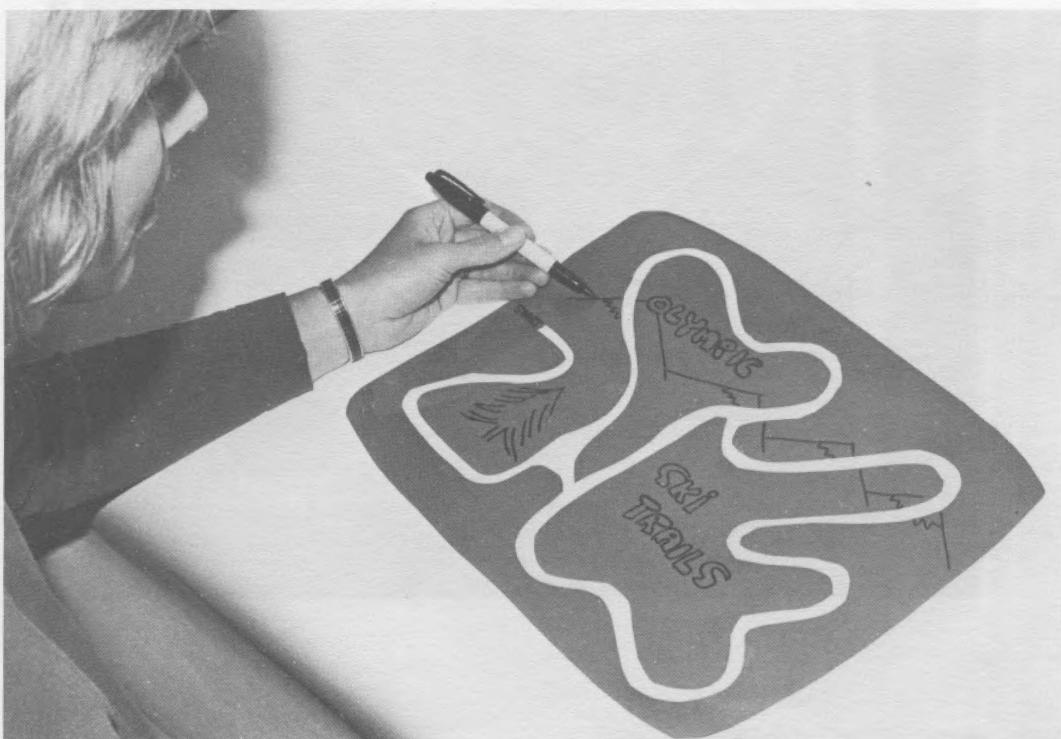


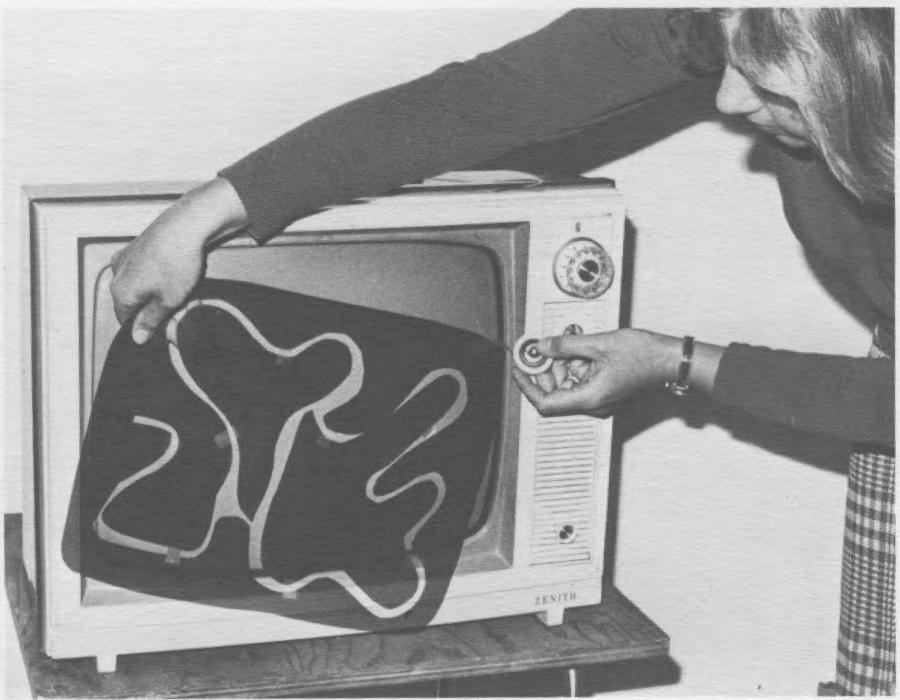
**5. Remove the Track Area.** With your scissors, cut along one side of the pattern line. After you've cut completely around the pattern, cut along the other side of the line. The idea is to remove a strip of acetate about one-half inch wide throughout the pattern. This opens a clear area for the track; the on-screen player will be clearly visible as he moves over the trail. While you're cutting, large pieces of the pattern may fall out of the main sheet. Let them drop; they are secured in the next step.

**6. Tape the Pattern.** Lay your pattern flat on the table and place the loose pieces in their original positions. With strips of transparent tape, fasten the loose pieces to the larger pattern. Place pieces of tape on the top and bottom of the sheet so you won't end up with exposed, sticky surfaces.

**7. Dress up the Overlay.** Notice how a marking pen livens the display with sketches of mountains, trees and snow, and the name of the game. You don't have to be an artist—just stroke boldly with your marking pen.

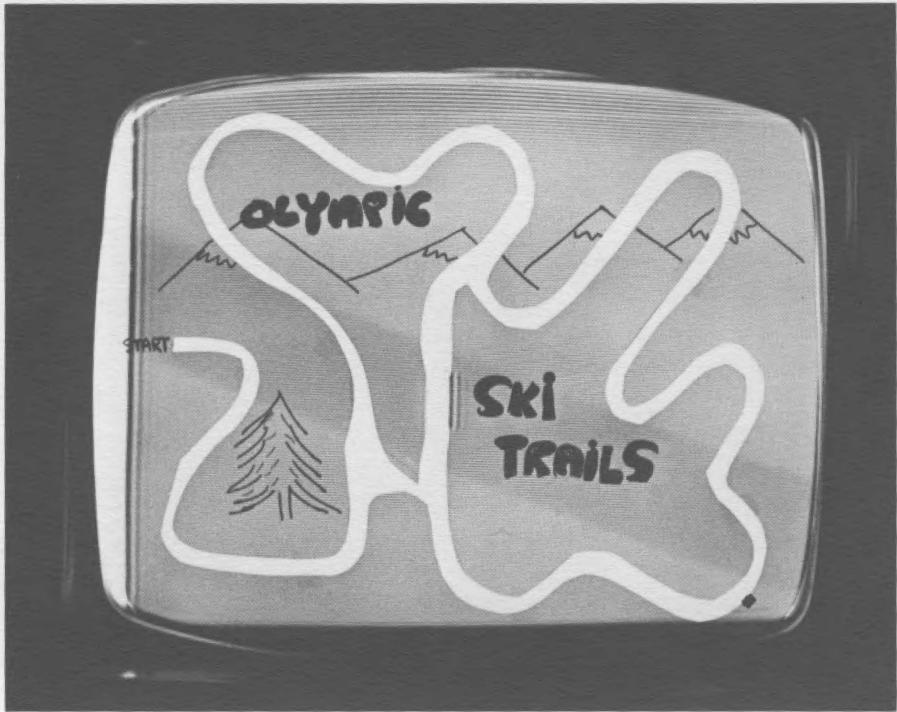
**Fig. 10-12.** Add interest with words and pictures.

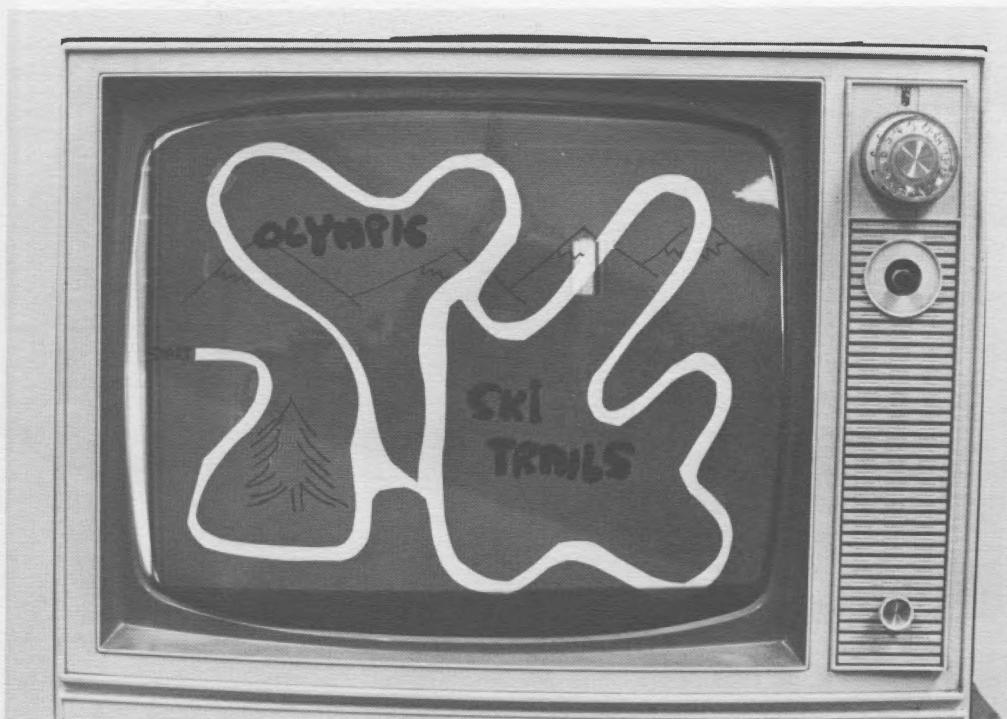




**Fig. 10-13.** Tape the overlay to the TV screen.

**Fig. 10-14.** Completed overlay in place.





**Fig. 10-15.** Spot of light, representing skier (arrow), is guided over the trail.

**8. Fasten to the TV Screen.** Because of static electricity on the face of a TV picture tube, an overlay may cling to the screen after it is pressed in place. If it won't stick to the screen, press on a few bits of tape.

**9. Play the Game.** It takes practice before you can easily guide the spot of light over the course. Manipulate horizontal and vertical controls in unison so your skier follows the path without veering off either side.

Scoring is done in two ways: (1) Each time a skier accidentally leaves the trail (and is visible only behind the overlay) tally a point. The player with the fewest points at the end of a run wins. (2) Keep track of how many seconds a skier remains on the trail before he falls off, or reaches the end. To determine the winner, check which player covered the greatest distance in the shortest time.

# 11

## Consumer's Guide to Video Games

Nearly 60 videogames of every description appear on the following pages. Although prices shown are manufacturer's suggested retail, prices will probably be considerably lower at your local dealer. At the outset of 1977, the videogame industry expected a 30 to 40 percent drop in the original price levels. Where no price is given, it was unavailable from the manufacturer, or the model carried no suggested price.

Nearly all games included here have on-screen digital scoring, so this feature is not mentioned further. If you encounter a hold-out model with manual scoring, avoid it; this feature is obsolete. Some games, however, offer manual scoring *in addition to* automatic on-screen scoring. In these models, consider manual scoring a minor convenience for tallying the results of several games. (On-screen scoring displays only the game in progress, not a cumulative total of many games.) When a game adds manual scoring, this feature is mentioned in the description.

Whether a game can generate color images is also described. If the words "color display" are missing, the game produces only black-and-white players, paddles and fields—on either a color or black and white TV.

Few games provide as standard equipment an AC adaptor for drawing power from a wall outlet. They function from flashlight batteries. In nearly all cases, however, an AC adaptor is available as an optional accessory. If the adaptor is included with the game, this is mentioned in the description.



**TV FUN GAME (Model 401)**  
(APF \$69.95)

**Games:** Type: Tennis, Hockey, Squash, Handball

**Players:** 1, 2

**Features:** Players may select ball speed, bat size and reflection angle to vary skill level between "Amateur" and "Professional".

**General Description:** A typical ball-and-paddle model.

**Remarks:** Console styling, with furniture-like finish, is especially handsome.



**PONG (Model C-100)**

(Atari \$39.95)

**Games:** Type: Table tennis  
Players: 2

**Features:** Seven rebound angles built into paddles, automatic speed-up after third and seventh volleys, pause between serves, four sound effects, color display.

**General Description:** Pong, which resembles ping-pong and tennis, provides one paddle per player. After three successful volleys, the ball automatically speeds up and reflecting angles grow narrow, simulating a game of slams. By the seventh volley, the ball again speeds up and angles sharpen further. At a score of 15 the game ends and a display with the final score moves across the screen.

**Remarks:** Although it offers only one type of play, Pong is a sophisticated game because of its numerous rebound angles and automatic speed-up feature. At slightly higher cost, you can purchase Super Pong, which has three additional games in an identical console.



**SUPER PONG (Model C-140)**  
(Atari \$59.95)

**Games:** Type: Catch, Solitaire, Super Pong, Pong  
**Players:** 1, 2

**Features:** Seven rebound angles built into paddles, automatic speed-up after third and seventh volleys, pause between serves, four sound effects, color display.

**General Description:** The numerous rebound angles and pause between serves are welcome features. Prolonged play is easy on the eyes because of the variety of color backgrounds. Colored paddles and ball also reduce on-screen confusion.

**Remarks:** Catch, one of Super Pong's four games, is unusual. Rather than manipulate paddles, players move a hole in the boundaries. When a hole is aligned properly, it "catches" the ball. Super Pong is the doubles version of Pong.



### **SUPER PONG TEN (Model C-180)**

(Atari \$79.95)

**Games:** Type: Super Pong, Pong, Catch, Handball, Basketball

**Players:** 1, 2, 4

**Features:** Same as Super Pong, except for the addition of two remote control units, provision for four players and two-player handball.

**General Description:** The basic games of Super Pong Ten are similar to those of Super Pong. Solitaire on the earlier set, however, is changed to Basketball. Handball is available on the Super Pong set by raising the adjustable Solitaire wall to cover one side of the screen. The main difference between Super Pong and Super Pong Ten is that games can be played by twice as many players.

**Remarks:** The remote controls not only enable four to play, but allow two players the convenience of sitting some distance from the console. Otherwise, Super Pong Ten includes the advantages of the earlier game: automatic ball speed-up and numerous rebound angles.



**BAG-A-TEL**

*(Calfax)*

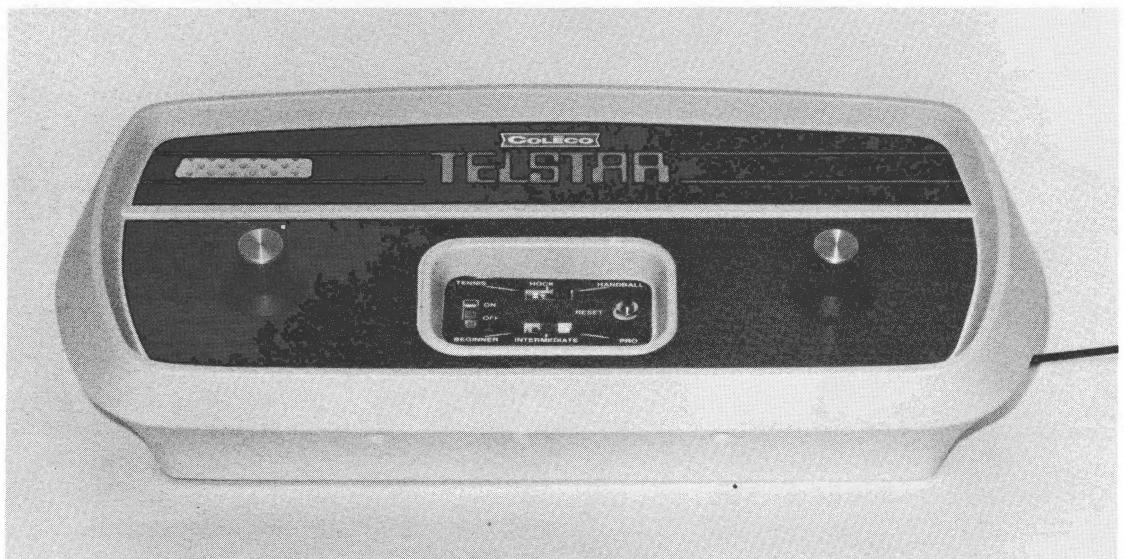
**Games:** Type: Tennis, Hockey, Squash, Handball

Players: 2

**Features:** Remote control operation for two players.

Service is automatic or manual

**General Description:** Typical ball-and-paddle game  
with selectable bat size, ball angle and ball speed.



### **TELSTAR (Model 6040)**

(Coleco \$60)

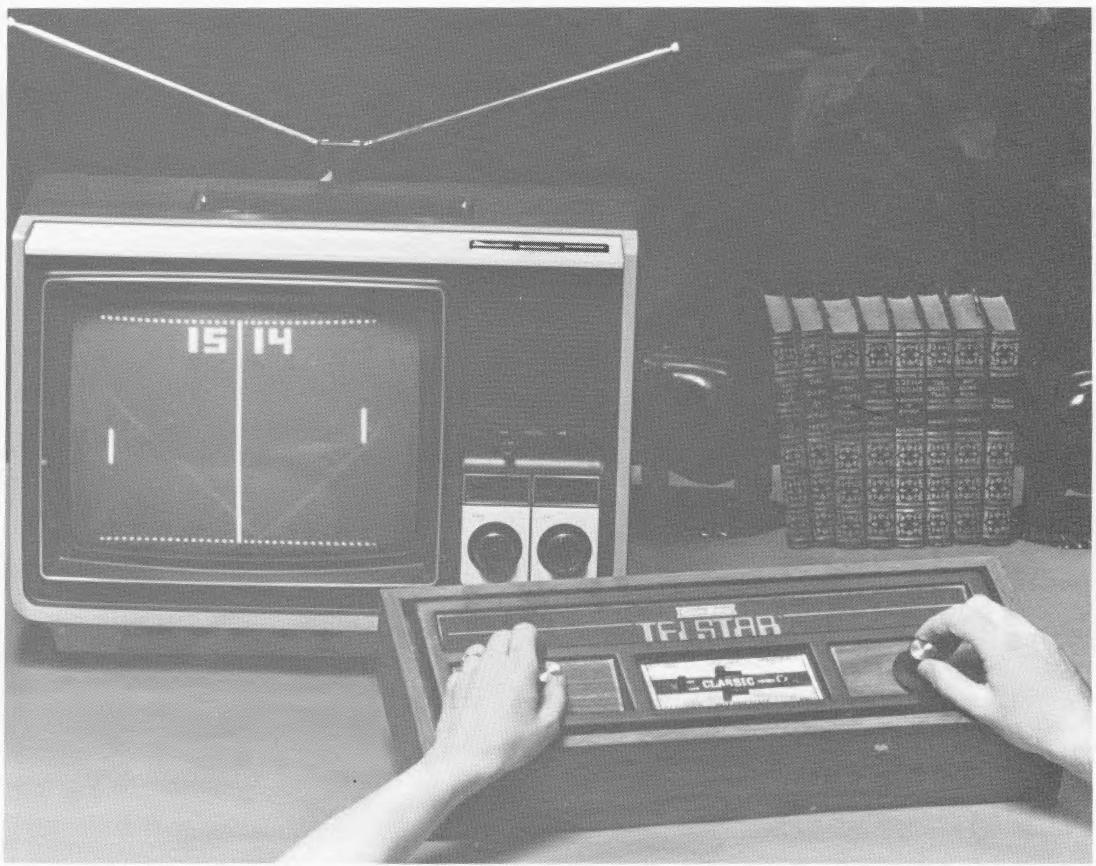
**Games:** Type: Tennis, Hockey, Handball

Players: 1, 2

**Features:** Switch for beginner, intermediate and advanced skills.

**General Description:** A conventional ball-and-paddle game, Telstar includes tennis and handball with one paddle per player and hockey with two paddles per player. When switched to "beginner", the game presents a large paddle with a slow-moving ball; "Intermediate" is a small paddle and slow-moving ball; "Pro" is a large paddle and rapidly-moving ball. On-screen digital scoring stops when one player reaches 15.

**Remarks:** Telstr delivers a quick serve that may be difficult for the novice player. There is no automatic-manual serve option to allow more leisurely play. Because there is no ball-angle adjustment, all games are played at one angle of reflection. The Telstar console is large and sturdy.



### **TELSTAR CLASSIC**

(Coleco \$70)

(Same as Telstar Model 6040 except for deluxe cabinet and AC adapter.)



**TELSTAR ALPHA** (Model 6030)

(Coleco)

(Same as Telstar, except for one additional game.)

**Remarks:** Jai Alai, the additional game on Telstar Alpha, is similar to Squash on other sets.



**TELE-PONG (Model 3047)**  
(Entex \$50)

**Games:** Type: Tennis, Table Tennis, Squash  
**Players:** 1, 2

**Features:** Each player may move horizontally and vertically. For solo play, you may compete against an "automatic player", or robot, who never misses the ball.

**General Description:** A ball-and-paddle type game with automatic serve.

**Remarks:** Scoring is neither automatic nor on-screen. Score is entered manually on dials on console. Horizontal and vertical hold controls (for adjusting rolling TV picture) located on game console.



**CONIC (Model TVG 101-4)**

(Conic International \$44.95)

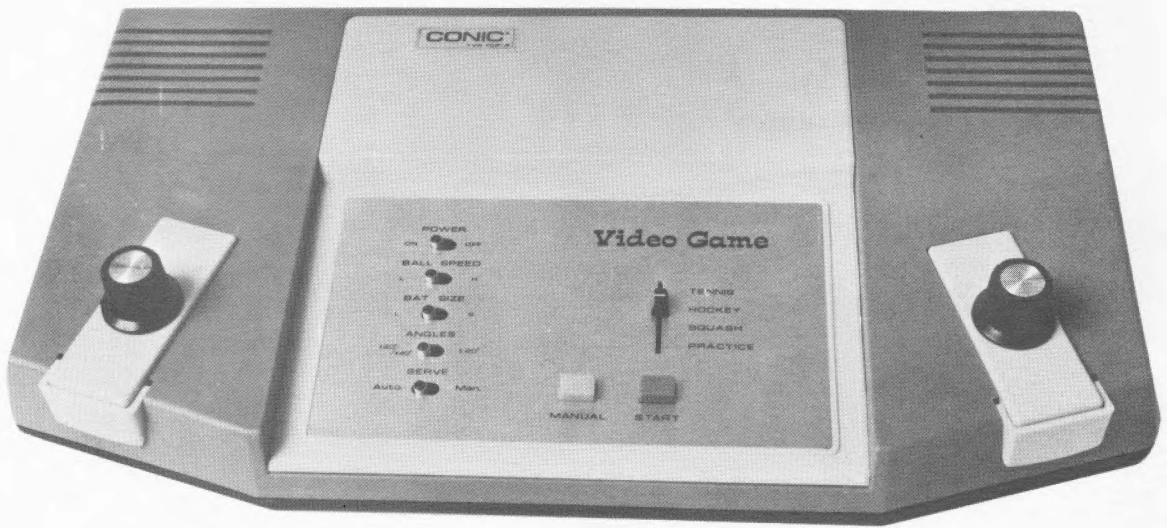
**Games:** Type: Tennis, Hockey, Squash, Handball

**Players:** 2

**Features:** Remote controls, sound cut-off switch and switch for automatic or manual serve.

**General Description:** A ball-and-paddle game with a two-position switch for ball speed, choice of two ball angles, and large or small bat size.

**Remarks:** When remote controls are not in use, they may be stored in top of console.



**CONIC (Model TVG 102-4)**  
(Conic International \$49.95)

(Similar to Conic TVG 101-4, except for larger console and convenient pockets for storing remote controls.)



**NOSE T' NOSE (Model 1006)**

(Concept 2000 \$39.95)

**Games:** Type: Practice Game, Squash, Table Tennis,  
Hockey or Soccer

**Players:** 1, 2

**Features:** Removable remote controls fit into console  
like a jigsaw puzzle.

**General Description:** A ball-and-paddle game with  
slider controls. Ball angle and speed are selectable by  
two-position switches. Manual serve button provided.

**Remarks:** Color and styling designed to appeal to chil-  
dren. Front-panel switch chooses TV channel 2 or 3.



**FOUR-WAY VIDEO GAME (Model 1004)**

(Concept 2000 \$39.95)

(Similar to Nose T' Nose except for adult styling.)



## CHANNEL F

(Fairchild—Console with two built-in games, \$169.95; Cartridges, \$19.95 each.)

**Games:** Built-in Type: Hockey, Tennis

Players: 1, 2

**Cartridges\***: Videocart 1: Tic-Tac-Toe, Shooting Gallery, Doodle, Quadra-Doodle; Videocart 2: Desert Fox, Shooting Gallery; Videocart 3: Blackjack, Double Blackjack; Videocart 4: Spitfire; Videocart 5: Space War; Videocart 6: Math Quizzes (3)

**Features:** Programmable game with plug-in cartridges, remote controls, time-out option, horizontal and vertical paddle movement, built-in AC adaptor, color display.

\*Cartridges beyond first three may not be available yet.

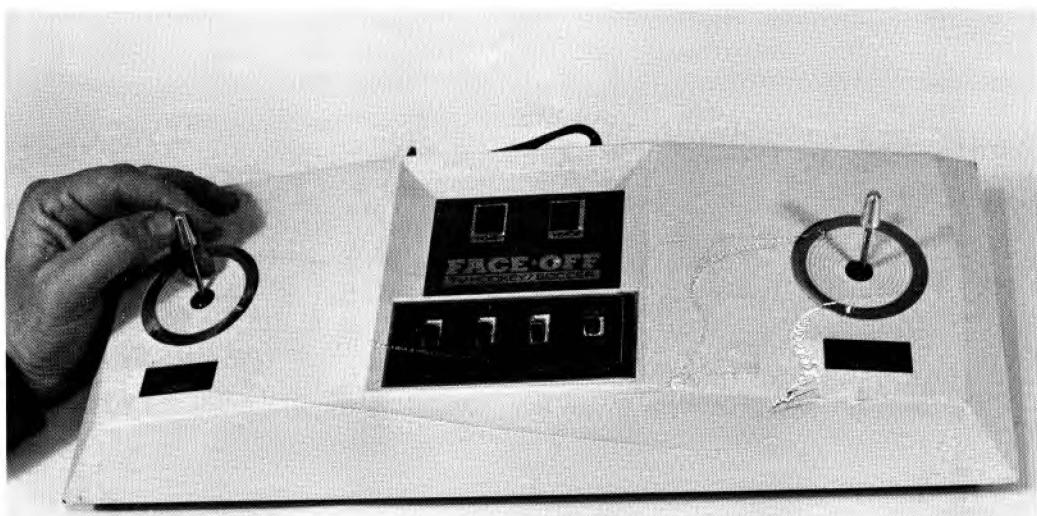
**General Description:** As the first programmable video-game, the Fairchild unit has computer-like features. Operations are entered on a keyboard and the game "talks" back via the TV screen. Tennis and hockey are similar to simple ball-and-paddle games, but the resemblance stops there. Plug-in cartridges offer a variety of intriguing types of play. Remote controls are more elaborate, too. They can be depressed or raised, pushed from side to side or rotated in a circle. Timing controls are also elaborate. Games may be limited to two, five, ten or twenty minutes. Elapsed time and running scores are continually displayed below the action. In tennis and hockey, there's a pause between serves, and a button for time outs.

In hockey, paddles realistically travel horizontally or vertically, but movement is limited so reaching a distant end of the rink requires a series of moves. In hockey and tennis, ball angle is changed by twisting the paddle with the hand controller.

All additional games are in optional cartridges (listed above).

**Remarks:** The advantages of a cartridge game are variety and sophistication. If the manufacturer's intentions are realized, new cartridges should appear on the market every few months. Besides games, they are expected to include puzzles, quizzes and educational subjects.

A disadvantage may be the "digital" movement of ball and players. Unlike simple games, where movement is smooth and fluid, the ball or other objects move in jumpy fashion. The controls, too, cannot be manipulated with the dexterity possible with simple knobs and levers. These limits, however, apply mostly to fast-moving sports, like tennis and hockey, and aren't a liability in most of the cartridge games. Thus, the greatest value in this programmable model is not in the ball-and-paddle games, but the cartridge-based activities.



## **FACE-OFF HOCKEY/SOCCER**

(Executive Games \$90)

**Games:** Type: Hockey, Soccer

Players: 2

**Features:** Joystick control for full-circle control of players, puck capture and release, skill changes through size variation of paddle and puck, built-in AC adaptor, color display.

**General Description:** A ball-and-paddle game with novel refinements. In hockey, the puck can be caught, held, shot from the paddle or jarred loose when paddles collide or hit the rink walls. The 360°, or full-circle, joystick movement is limited for the sake of realism: you cannot move the length of the rink in one motion. Progress is gradual, more like an actual skater or soccer player. Another realistic touch: you cannot move backward as fast as forward.

**Remarks:** Control movement is designed to give the effect of gliding on ice. The option of catching a puck or shooting it into a goal adds a dimension not yet found in other videogames. Scoring does not appear on screen, but on a console scoreboard.



## FANTASIA 101

(Fantasia)

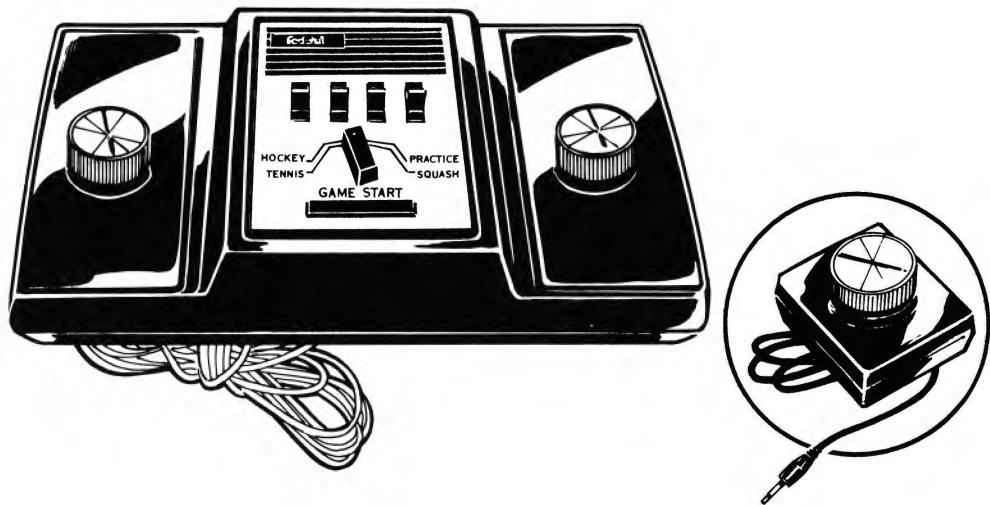
**Games:** Type: Hockey, Squash, Tennis, Practice

Players: 1, 2

**Features:** Ball angle, paddle size and speed variations; remote controls, automatic or manual serve.

**General Description:** A simple ball-and-paddle game. Remote controls attached to console with ten-foot wire.

**Remarks:** Lightweight console and remote units may not withstand heavy abuse. FCC approval, at time of this writing, was pending.



## VIDEO SPORT

(Federal Transistor Co.)

**Games:** Type: Hockey, Tennis, Squash, Practice

**Players:** 1, 2

**Features:** Optional remote control replaces right paddle control on console, manual or automatic serve, choice of small or large paddle, choice of fast or slow ball speed.

**General Description:** A conventional ball-and-paddle game.



**HEATHKIT (Model GD-1999)**

(Heath Co. \$69.95)

**Games:** Type: Tennis, Hockey, Handball

Players: 1, 2

**Features:** Remote controls, ball served from racquet, automatic ball speed-up, variable paddle size, paddle English, assembled from a "do-it-yourself" kit, solo play against machine, color display.

**General Description:** A ball-and-paddle game which automatically speeds up after ball is served and volleyed four times. Rebound angle (English) depends on point where ball strikes paddle.

**Remarks:** Although assembled from a kit, this game can be quickly and easily put together by almost anyone. The electronic circuits are factory-wired and tested; the builder does simple mechanical assembly. No soldering required.

Note: Earlier Heathkit games played only through certain Heath TV receivers. This model operates with any TV set.



## COLORGAME

(Intercon Marketing Corporation)

**Games:** Type: Hockey, Tennis, Handball

Players: 1, 2

**Features:** Paddle size adjustment, automatic ball speed-up, remote controls, pause between serves, time-out option, TV sound control, color display.

**General Description:** In each game, players can choose three paddle sizes to vary the skill level. These adjustments produce a handicap that matches the competition between two uneven players.

The ball or puck automatically speeds up after the second successful volley. When one player scores, a cumulative total appears on screen, fades and, after a slight pause, the ball is served to the loser of the last point. When one player scores 15, the game is over.

In hockey there's one paddle per player, which serves as the goalie. There are also three smaller paddles on each side which move up and down, but a player has no control over them. These paddles bounce the puck in

unpredictable patterns. Unlike most videogames, this one produces sound through the television speaker rather than the console.

**Remarks:** The paddle-size adjustment, besides handicapping, enables you to play a solitary game by adjusting one paddle to block a hockey goal. If you score a point you can call time-out by moving your paddle off-screen. Unlike most games, the sound can be turned down or completely off because it emanates from the TV speaker.

Colorgame has only a short length of wire between the console and TV set. You'll be tempted to put the console atop the TV, but avoid this location if it's a hot area. The circuitry inside the console could be affected.

The on-off switch is unlike most games. You turn the game on and off from the console, rather than at a separate switch located on the back of the TV.



## TV SPORTS 802

(Lloyd's \$99.95)

**Games:** Type: Tennis, Hockey, Squash/Handball, Practice, Skeet Shooting, Target Shooting

**Players:** 1, 2

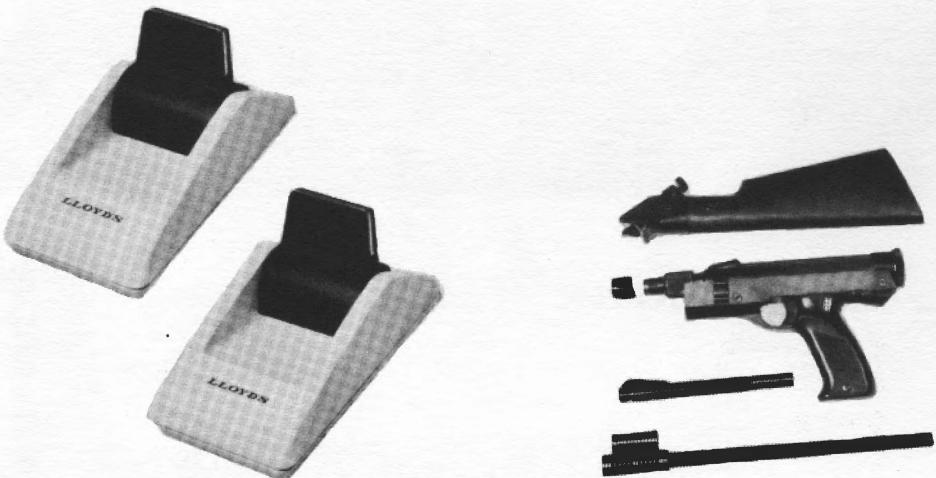
**Features:** Remote controls, manual or automatic serve, two-position paddle size and ball angle, target game.

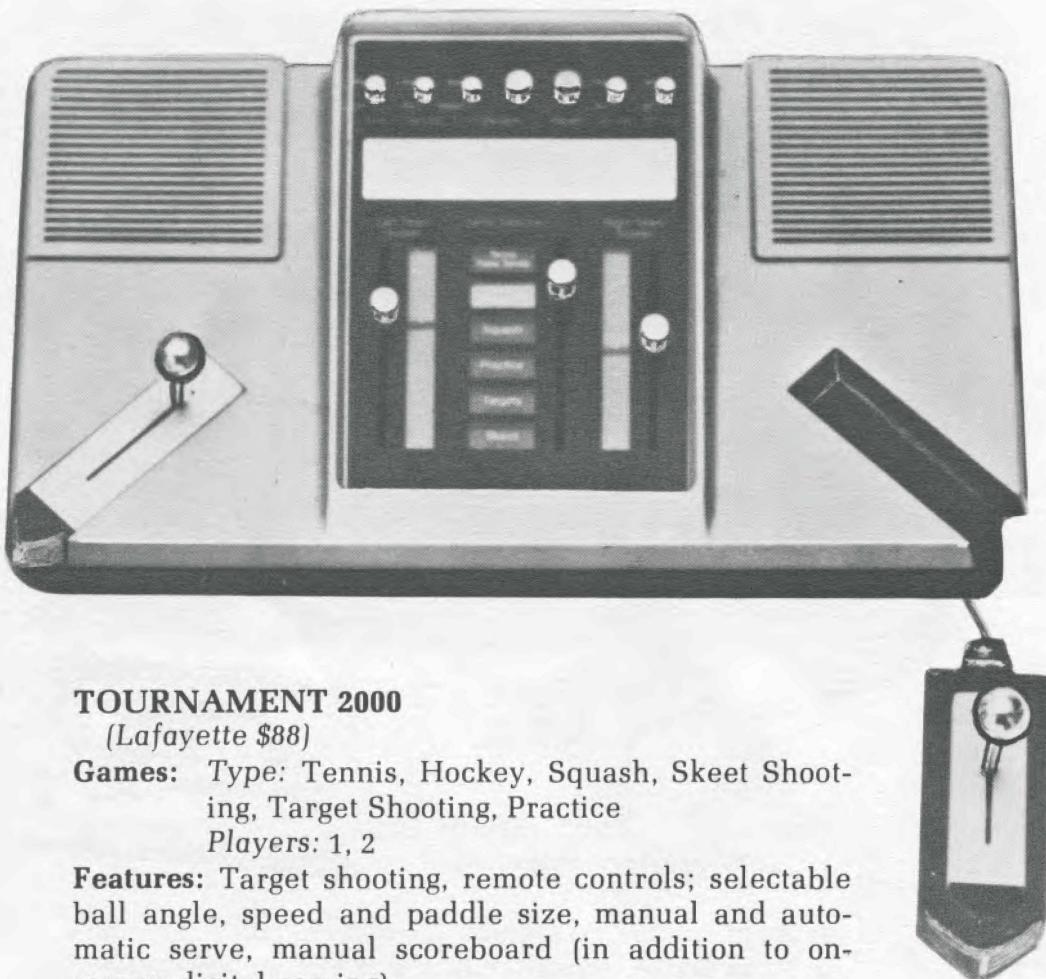
**General Description:** With the exception of its target games, the Model 802 is a typical ball-and-paddle set. The two remote units are operated by lever-type controls. The face of the console conveniently pictures each of the six games.

The target games are played with a harmless rifle and pistol. When the straight-line target is selected, a square of light moves diagonally across the screen. If the moving target is chosen, the square of light bounces around the screen. After 15 shots a score appears on the screen to indicate the total number of shots and the number of hits. The gun is attached to the console through a six-foot length of wire, allowing you to shoot up to about twenty feet from the TV screen.

**Remarks:** Because target games are affected by room light they are sometimes troublesome to adjust. The photoelectric cell in the gun should not be triggered, except by the on-screen target. Too much outside light will record false hits on the screen.

Although this game plays only in black-and-white, its dark and light paddles are helpful for distinguishing the players.





### TOURNAMENT 2000

(Lafayette \$88)

**Games:** Type: Tennis, Hockey, Squash, Skeet Shooting, Target Shooting, Practice

**Players:** 1, 2

**Features:** Target shooting, remote controls; selectable ball angle, speed and paddle size, manual and automatic serve, manual scoreboard (in addition to on-screen digital scoring).

**General Description:** Besides ball-and-paddle contests, this game offers rifle and pistol play. In skeet shooting, a pistol or rifle is aimed at a square of light which travels across the screen. Hits and misses are tallied after each shot. In target shooting, a rebounding light spot is the objective. The "bullets" are rays of light.



### **ODYSSEY 300 (Model 7500)**

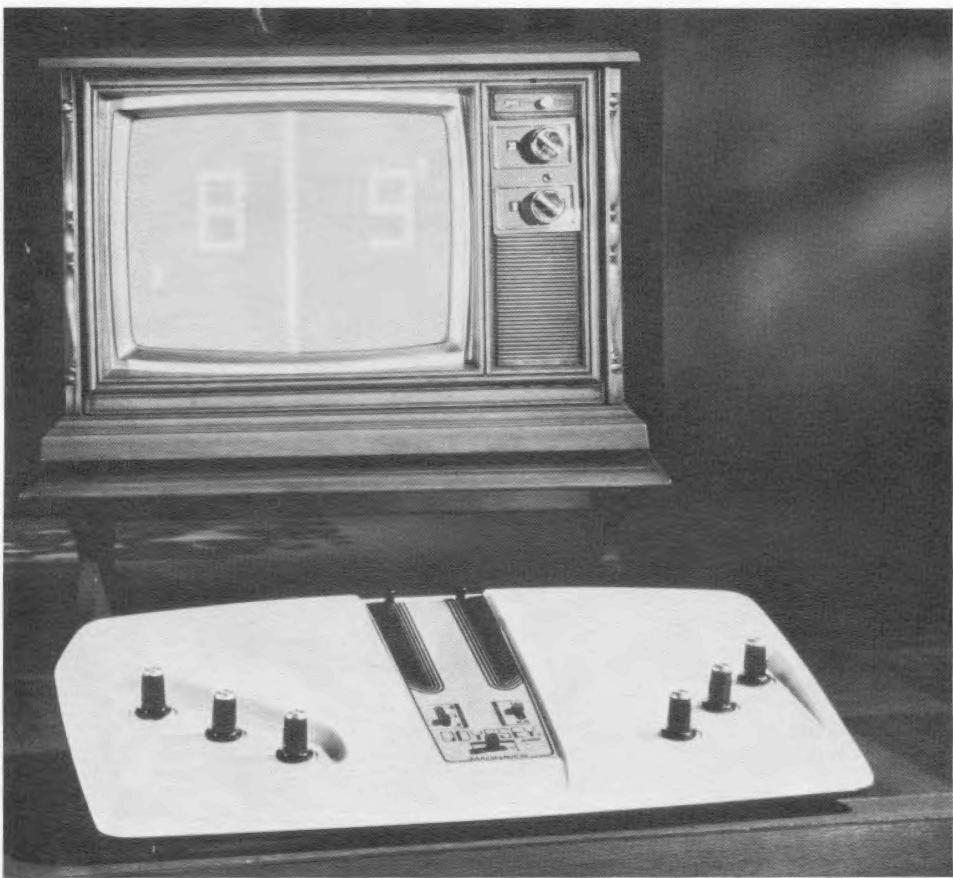
(Magnavox \$50)

**Games:** Type: Tennis, Hockey, Smash

Players: 2

**Features:** Three-position skill switch (novice, intermediate and expert) for paddle size and speed, automatic serve.

**General Description:** Tennis and Smash (handball) are one-paddle games; hockey provides two paddles per player. A dial on the console controls vertical movement only, with ball rebound angle built into the paddles. Operating the skill switch reduces paddle size and speeds the ball. All games have top score of 15.



**ODYSSEY 400 (Model 7516)**

(Magnavox \$70)

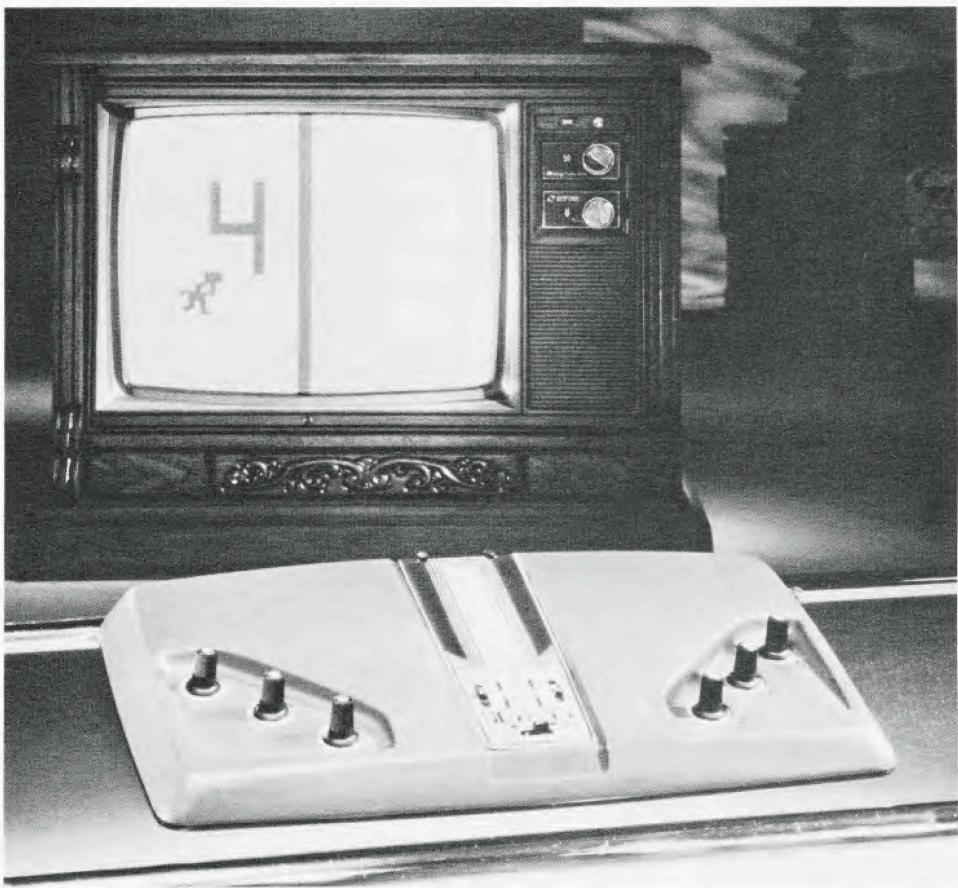
**Games:** Type: Tennis, Hockey, Smash

Players: 2

**Features:** Horizontal and vertical paddle movement, separate English control on console, ball-speed control, automatic serve, centering control.

**General Description:** A ball-and-paddle game similar to Odyssey 300, but with additional knobs for horizontal paddle movement, English and a switch for an extra on-screen paddle for hockey goalies and tennis doubles.

**Remarks:** Separate English control allows each player to change the ball's path after it is struck. Centering control permits game to be centered on screen from console position.



### **ODYSSEY 500 (Model 7520)**

*(Magnavox \$90)*

**Games:** Type: Soccer, Tennis, Hockey, Smash  
Players: 1, 2

**Features:** Similar to *Odyssey 400* with addition of realistic shapes for on-screen players, soccer with movable goals, AC adaptor included; color display.

**General Description:** *Odyssey 500* adds a one-player soccer game with a movable goal opening. Unlike earlier games, which use only a stroke of light for player and paddle, this one has realistic silhouettes. Soccer players stand erect, hockey players crouch over sticks and tennis players hold racquets. In color play, hockey has a blue background, tennis green and soccer red.

**ODYSSEY 2000 (Model BH7510)\***

(Magnavox \$50)

**Games:** Type: Tennis, Hockey, Smash, Practice

Players: 1, 2

**Features:** Two skill levels, practice game for solo play.

*\*(Preliminary report: game may not yet be available in stores.)*

**ODYSSEY 3000 (Model BH7511)\***

(Magnavox \$60)

**Games:** Type: Tennis, Hockey, Soccer, Gridball,

Smash, Smash Practice, Basketball, Basketball

Practice

Players: 1, 2

**Features:** Remote controls, gridball game requires that player move ball through series of barricades, random movement of on-screen players, three-speed handicap switch, fast-slow speed adjustment.

*\*(Preliminary report: game may not yet be available in stores.)*

**ODYSSEY 4000 (Model BH7530)\***

(Magnavox under \$100)

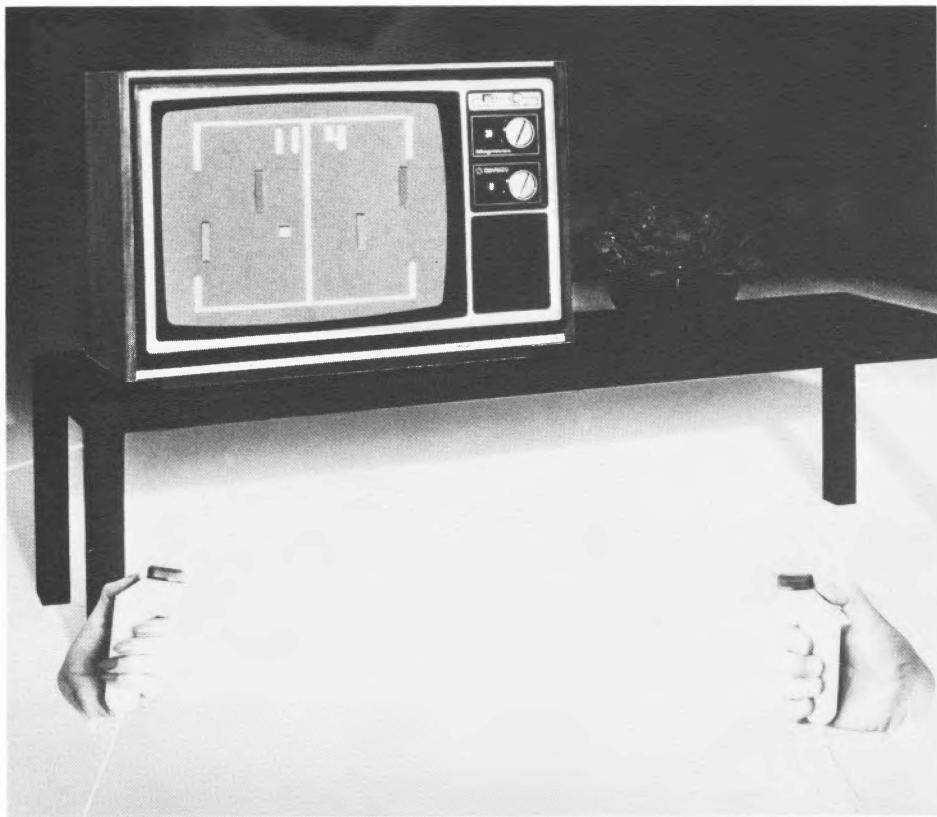
**Games:** Type: Tennis, Volleyball, Knockout, Hockey,

Basketball, Tank, Helicopter

Players: 1, 2, 3, 4

**Features:** Remote controls (4), seven games in 24 variations, single-player competition against game, stop-action holds ball or puck, automatic speed increase in seven steps, selectable handicap for all players, AC adapter.

*\*(Preliminary report: game may not yet be available in stores.)*



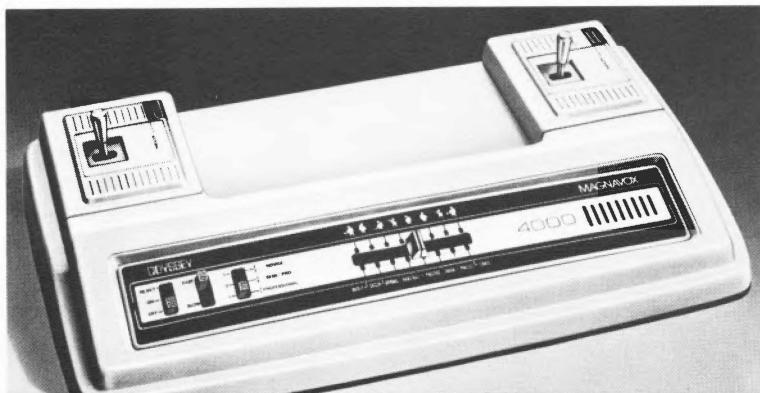
## MODEL 4305

(Magnavox \$500)

**Games:** Type: Tennis, Hockey, Smash  
Players: 2

**Features:** Not a game only, but a 19-inch color TV set with built-in game. Remote controls, automatic serve, two-speed skill switch and color display.

**General Description:** A button on the TV set selects the videogame function; there is no conventional game console. Two remote controls, which can reach twelve feet from the set, have reset and speed selector buttons. A knob on each remote controls vertical paddle movement. Because the game is part of the TV, batteries or AC adaptor are not needed. Hockey is the traditional two-paddle game; other games offer one paddle per player.





### RICOCHET (Model MT1A)

(Microelectronic Systems \$120)

**Games:** Type: Richochet, Three-wall Racquetball

Tennis, Hockey

**Players:** 1, 2

**Features:** Pro-Slam (button to increase ball speed), Pro-English (button to increase ball angle), individual player consoles, color display, on-off sound control, color variation control, speed and angle variations, selectable paddle-size, manual or automatic serve.

**General Description:** After choosing one of two ball angles, speeds and paddle sizes, the action may be altered during play by the Pro-Slam or Pro-English button. The larger of two consoles contains skill variation switches for both players, and a switch to change the background color for each game.

Pro-English doubles the angle of reflection after the ball is struck. Because the angle is also affected by where the ball strikes the paddle, the number of possible angles is increased from three to five. Changing the angle or speed in the midst of play adds an element of surprise.

The paddles are colored white and green, while the ball is red in all games. Color is helpful in two-paddles-

per-player hockey, and it minimizes confusion in squash. In other games, "Ricochet" is handball or practice. What's called "Racquetball" in this game is squash in others.

### **RICOCHET CHALLENGER** (*Model MT3A*)

(*Microelectronic Systems*)

**Games:** Type: Tennis, Hockey, Handball

Players: 1, 2

**Features:** Automatic ball speed-up, variations in paddle size and ball angle, on-off sound switch.

**General Description:** Each of the three ball-and-paddle games can be played by one or two players. Paddle controls are lever type. Games end at a score of 15.

### **RICOCHET CHAMPION** (*Model MT2A*)

(*Microelectronic Systems*)

**Games:** Type: Tennis, Hockey, Handball

Players: 1, 2

**Features:** Similar to Ricochet Challenger, except for color display, remote controls, ball served from paddle and improved English.

**General Description:** A ball-and-paddle game with lever controls on remote units. A switch enables player to change color background.

### **TV SPORTS 77**

(*Olympus Electronics*)

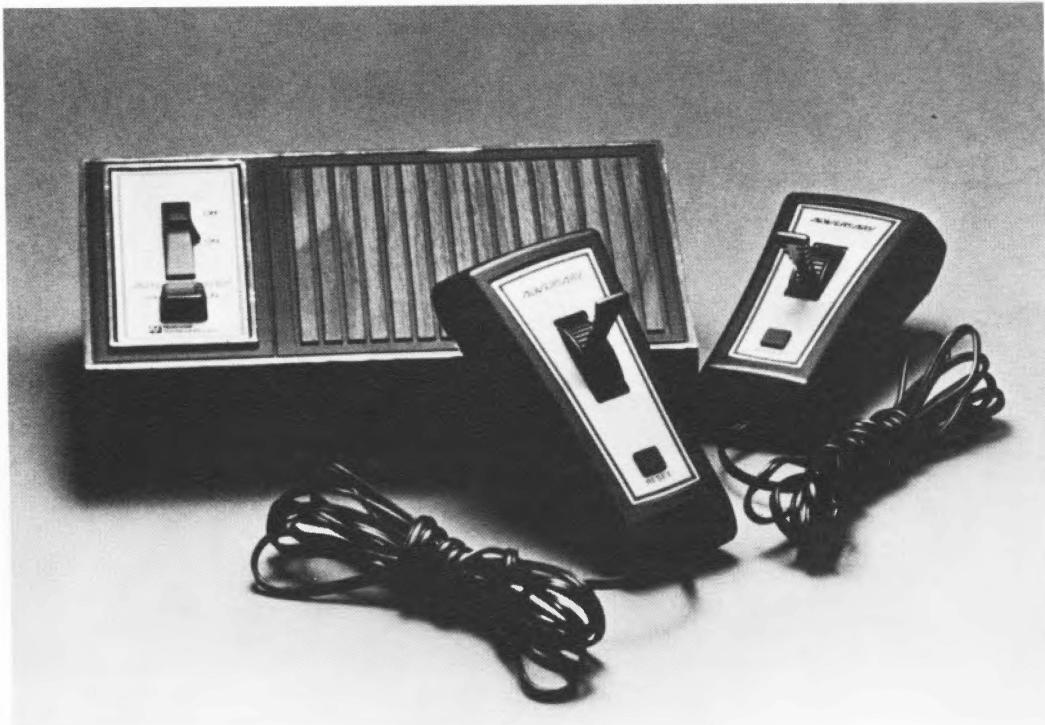
**Games:** Type: Tennis, Hockey, Handball

Players: 1, 2 or 4

**Features:** Three ball speeds, five ball angles, amateur-expert skill levels, manual or automatic serve, color display.

**General Description:** A ball-and-paddle game.





## ADVERSARY

(National Semiconductor \$99)

**Games:** Type: Tennis, Ice Hockey, Handball

**Players:** 1, 2

**Features:** Three individually selectable paddle sizes for handicapping, serve not random but controlled by players, remote controls, English, color display.

**General Description:** A ball-and-paddle game with "time-out"; play can be interrupted, then resumed, without changing the score. Sound is heard through TV speaker, not at game console, as in most other models. Rebound angle depends on where ball strikes paddle. Ball automatically speeds up after four hits.



**QUADTRONICS** (Model Q376)  
(Quadtronics \$69.95)

**Games:** Type: Tennis, Hockey, Handball, Smash

**Players:** 1, 2

**Features:** Adjustable ball angle and speed, variable paddle size, color display, AC adaptor included.

**General Description:** A ball-and-paddle game with players and boundaries in color. Handball, using one paddle per player, is known as squash on other sets. Smash is similar to handball. Because smash is programmed for one-player competition against an automatic opponent, it's a game rather than a practice session, as in other models. This makes Quadtronics Q376 a four-game set rather than three plus practice. The score, posted above the game's boundaries, is an advantage. But the lack of manual serve causes the ball to be served automatically after each point with flustering speed.



**QUADTRONICS (Model Q476)**  
*(Quadtronics \$89.95)*

**Games:** Type: Tennis, Hockey, Handball, Smash  
Players: 1, 2

**Features:** Same as Quadtronics Q376, except for addition of remote controls.

**Remarks:** Remote controls are attached to console with coiled cords to reduce cable tangling.



## STUDIO II

(RCA \$149.95; Cartridges: \$14.95-19.95 each)

**Games:** Built-in Type: Bowling, Freeway (car racing), Patterns, Doodles, Math; Cartridge Type: TV School House 1, Space War, Fun-with-Numbers

**Features:** Plug-in cartridges, digital keyboard controls, timing device, sound on-off switch, built-in AC adaptor, black-and-white display.

**General Description:** The Studio II is a programmable model with internal games and optional cartridges for additional types of play. Calculator-like keyboards, each with nine pushbuttons, serve as controls for action games and digital entry of numerical programs. In the car race, a driver attempts to drive the greatest number of accident-free miles in a one-minute time span. Addition is a numerical game; each player tries to tally three numbers faster than an opponent. The final score is displayed when time runs out. Bowling is a two-player

game set on an alley with ball and pins. Scores for each frame, including strikes and spares, are shown on screen, as well as a final score when ten frames plus bonus frames are completed.

Doodles begins on the screen with a point of light that moves in response to pushbuttons. Designs, squiggles, initials and other doodles can be constructed. In Patterns, a line is drawn by the player which is automatically repeated. As the screen fills with these recurring images you may interrupt and vary the patterns.

The cartridge games include a scrambled number game, a numerical guessing game and an arithmetic quiz with questions in a separate booklet. The cartridges also include two on-screen target games. Future cartridges may include baseball, tennis, squash and hockey. For the risk-taker, a casino cartridge with black-jack, Acey Ducey, poker and horseracing is planned.

**Remarks:** With its lack of color display, slow-moving images and heavy emphasis on numerical challenges, this model loses the penny-arcade flavor of most other videogames. In this introductory model, Studio II seems slanted toward the serious fan of mathematical contests.



### TV SCOREBOARD

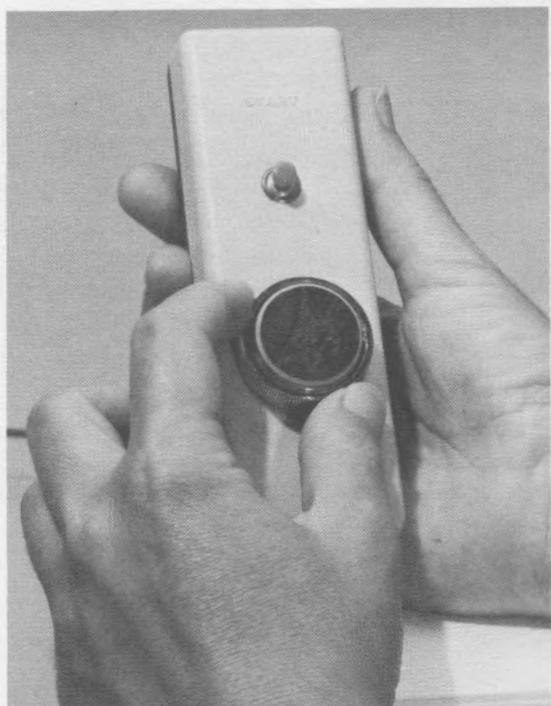
(Radio Shack \$69.95)

**Games:** Type: Tennis, Handball, Hockey, Practice

Players: 1, 2

**Features:** Adjustable ball speed, rebound angle and paddle size, remote controls, AC adaptor.

**General Description:** A ball-and-paddle game with knob-type player controls. "Slice" switch chooses ball rebound angle of 20 or 40 degrees.





**TELE-MATCH (Model 4400, 6600, 7700)**

(Tele-match \$59-\$69 (varies with type of cabinet))

**Games:** Type: Tennis/Ping Pong, Hockey, Handball/Racquetball, Solo/Singles Handball

Players: 1, 2

**Features:** Remote controls, selectable ball angle, speed and paddle size, manual or automatic serve.

**General Description:** All three models are similar ball-and-paddle games, differing in console appearance, length of remote cables and design of remote unit.





### **GORILLA GAME (Model TG-101)**

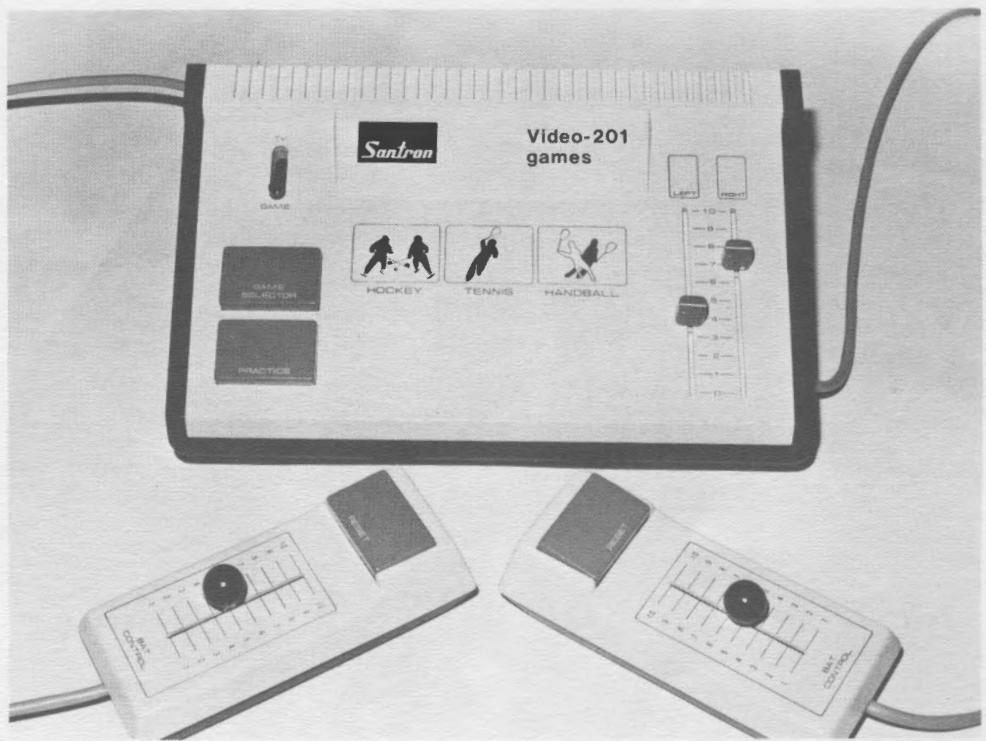
(Santron \$69.95)

**Games:** Type: Tennis, Hockey, Handball, Solitaire

Players: 1, 2

**Features:** Remote controls, adjustable paddle size and speed, manual or automatic serve, paddle English.

**General Description:** A ball-and-paddle game with lever-type controls on remote player unit.

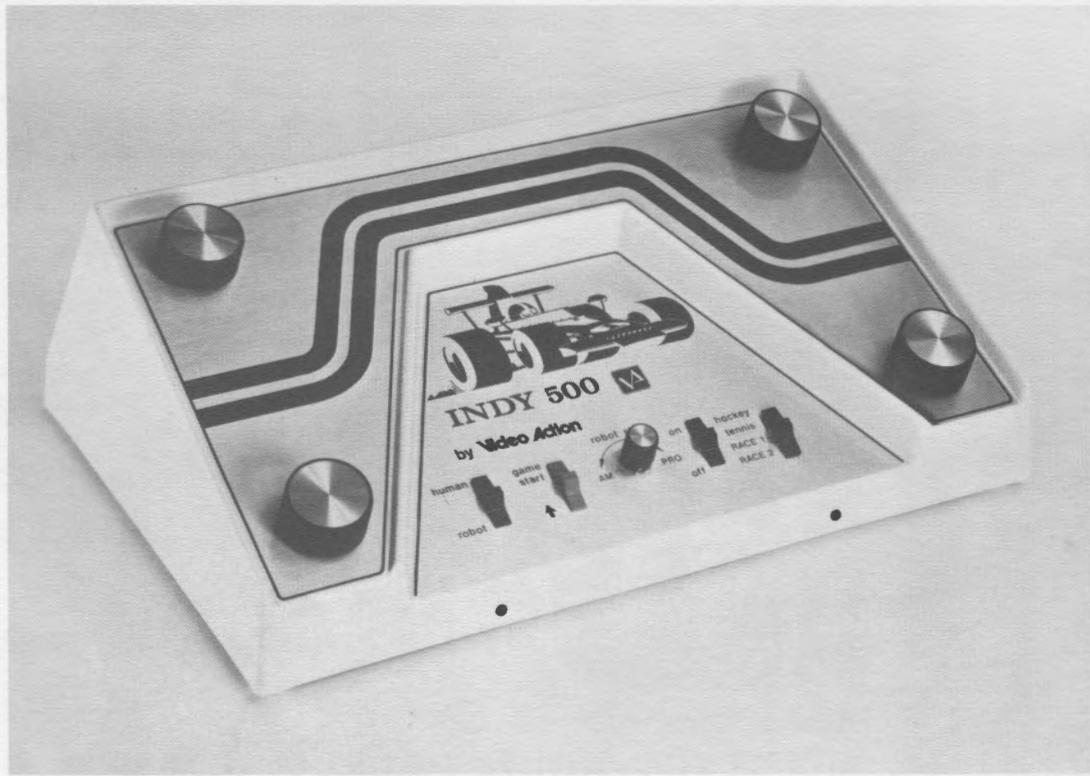


**GORILLA GAME (Model TG-201)**  
(Santron \$89.95)

**Games:** Type: Tennis, Hockey, Handball, Solitaire  
**Players:** 1, 2

**Features:** Remote controls, adjustable paddle size, automatic ball speed increase, paddle English, AC adaptor included, color display.

**General Description:** A ball-and-paddle game with lever-type controls on remote control units. After fourth hit, ball doubles its speed. Besides on-screen scoring, a "master score pad" appears on console to tally number of games won by each side. Ball is served from paddle, not at random.



## **VIDEO ACTION IV "INDY 500"**

(Universal Research Labs \$129)

**Games:** Type: Road Race, Tennis, Hockey, Robot

Players: 1, 2 or 4

**Features:** Road race, four player controls, robot (automatic opponent), color display.

**General Description:** The outstanding game is action-type racing. In Road Race 1, one player steers an on-screen auto in an attempt to avoid crashing into the obstacle cars moving randomly on the track. Each accident is recorded in a cumulative score that ends at 9. After a collision, track movement stops, then proceeds at a faster and faster rate until the next accident repeats the cycle.

In Road Race 2, two drivers race on individual tracks. An accident by either driver stops the action and records a point. When one player has 9 accidents, the

game ends in a color display. The driver with the fewest points wins.

The remaining games are the ball-and-paddle type.

**Remarks:** The Road Race games with raucous noise and nimble action generate considerable excitement.

Tennis, on the other hand, serves the ball from center court, which is difficult to return. It causes many lost points, as does the extremely high rates during automatic speed-up of the ball in tennis and hockey.





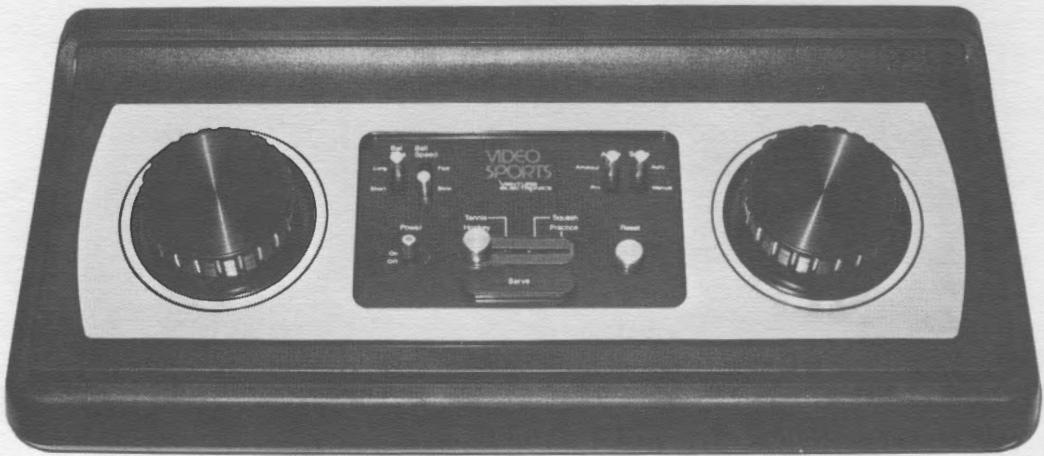
### TOURNAMENT (Model 101) (Unisonic)

**Games:** Type: Tennis, Hockey, Squash, Practice

Players: 1, 2

**Features:** Remote controls, adjustable ball speed, paddle size and rebound angle, automatic or manual serve.

**General Description:** A ball-and-paddle game with lever-type remote controls.



**VIDEO SPORTS** (Model VSV-1)

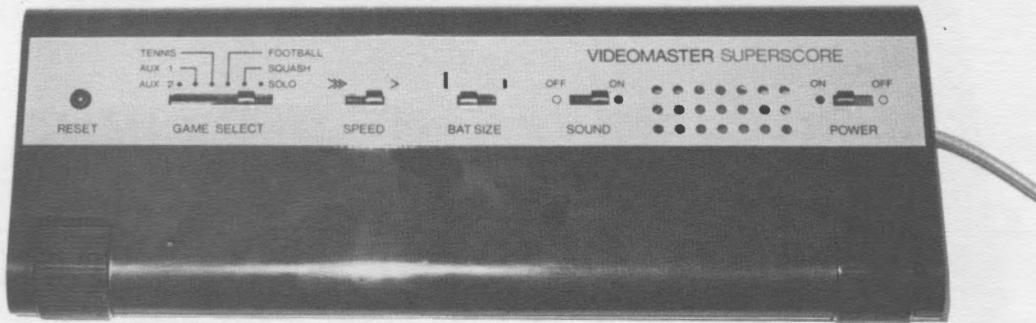
(Venture Electronics \$60)

**Games:** Type: Tennis, Hockey, Squash, Practice

Players: 1, 2

**Features:** Adjustable ball speed, angle and bat size, manual or automatic serve.

**General Description:** A ball-and-paddle game with knob-type player controls.



## SUPERSCORE

(Videomaster \$99.95)

**Games:** Type: Tennis, Football, Squash, Solo

Players: 1, 2

**Features:** Selectable ball speed and paddle size, sound switch, paddle English.

**General Description:** A ball-and-paddle game. Football, with two paddles per player, is known as hockey on other sets. Solo is similar to handball. Paddle controls are roller-type knobs on console.

**Remarks:** Two selector positions, Auxiliary 1 and 2, are unused in present model. Manufacturer reports they may be used for the addition of future games, possibly a rifle attachment for target-shooting.